VOL. XIX, No. 26 CHICAGO, JUNE 29, 1911 $3.00 PER YEAR

MOTOR AGE

2

3

4

5

Clean Sweep for France

First Six To Finish in Light-Car Race Over the Boulogne Course Fly the Tri-Color of the Republic—England Well Placed—Contest Won by Bablot in Delage, Who Averages 55.1 Miles Per Hour for the 387.6 Miles

By W. F. Bradley

BOULOGNE, France, June 27.—Special cablegram—France scored a sweeping victory today in the light-car race over the Boulogne circuit when the first six to finish drove under the tri-color of this country, the first international victory of any importance France has scored since Szisz, in a Renault, won the grand prix in 1906, a victory which for the time being makes the French forget Lautenschlager and Nazzaro and believe that the turn of the tide has come. England, too, has cause for congratulation, for of the thirteen that finished, four were from the United Kingdom. So far as England is concerned this is the first time it has appeared in the motor limelight since Edge won the Gordon Bennett in 1902.

Bablot, driver of one of the four Delages, is the hero of the day, for he finished the 387.6 mile race today in 7:02:41, an average of 55.1 miles per hour, but only 71 seconds ahead of Boillot, in a Peugeot. Then came four other French cars, three English, two more French, another English, a Belgian and a German car. In addition to the thirteen whose time was caught, there still were fourteen others running, while nine had succumbed for various reasons. Of the orig-

FINISHERS IN FRENCH LIGHT-CAR RACE

No.	Car	Driver	Country	Time	M.P.H.
1	Delage	Bablot	France	7:02:41	55.1
2	Peugeot	Boillot	France	7:03:52	54.9
3	Delage	Thomas	France	7:04:17	54.8
4	Delage	Guyot	France	7:05:18	54.7
5	Gregoire	Porporato	France	7:28:29	51.8
6	Calthrope	Burgess	England	7:39:00	50.8
7	Arrol-Johnston	Reid	England	7:39:37	50.6
8	Arrol-Johnston	Resta	England	7:45:29	48.9
9	Gregoire	De Marne	France	7:57:19	48.7
10	Cote	De Vere	France	7:59:29	47.0
11	Arrol-Johnston	Hodge	England	8:17:11	46.8
12	Excelsior	Woelmont	Belgium	8:20:24	46.5
13	Mathis	Mathis	Germany	8:30:55	46.4

1—BABLOT, WINNER OF FRENCH LIGHT-CAR RACE, AND FRONT VIEW OF THE DELAGE, VICTORIOUS CAR. 2—BOILLOT, PEUGEOT, WHO FINISHED SECOND. 3—THOMAS, IN DELAGE, THIRD. 4—GUYOT IN DELAGE, FOURTH. 5—PORPORATO IN GREGOIRE, FIFTH

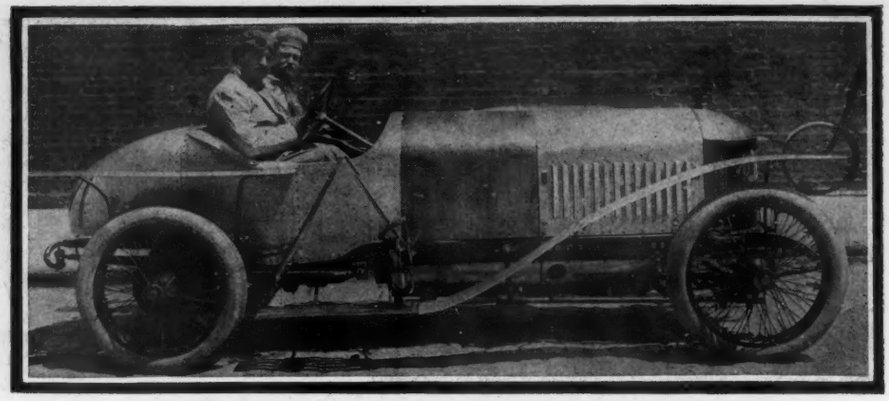
inal entry list of fortylfour, thirty-six started.

It truly was an international race, for four countries were represented in the speed battle, while two others had entered cars which, however, did not start. France started eighteen cars, England eight, Belgium six, and Germany four. An Italian and an American entry failed to go to the tape. The American car was a Ford, which was entered by E. Depasse, the French representative of the Ford company. Barred out originally by the weight limit, the Ford finally was listed by permission of the promoters. Before the race, however, there came a change of heart on the part of the powers that be, and Depasse was informed that unless he packed 400 pounds of ballast to come up to the weight limit he could not participate. This Depasse refused to do, and scratched his entry. In addition the scratches included three Sizaire-Naudins, two Fifs, one Spa and a Koecklin.

Never before in the racing history of France has there been such a hair-raising finish as the one between Bablot and Boillot. For the first half of the race it was Boillot who cut out the pace and Bablot drove desperately to overtake him. Finally the Delage pilot got in front and the Peugeot driver became the runner-up. Lap after lap they battled for the lead, but Bablot seemed to be able to stall off his rival. Nip and tuck they went into the last lap, and it was a question which would win. It seemed all up with Bablot when, with 6 miles more to go, a tire went up. The Delage man, though, never wavered. Realizing he could not stop to change, he drove the last 6 miles on the rim at the rate of 60 miles an hour and beat out Boillot by the narrow margin of 71 seconds. One one round Boillot had to change three tires, although none of them was punctured.

Consistent Work of Delage

One of the features of the contest was the consistent running of the four Delages. Up to the end of the ninth round there was a difference only of 5 minutes between the leading Delage and the fourth one. In the tenth lap, though, Rigal was put out through the universal joint housing on his car coming adrift, and he was unable to continue. The winning Delage ran the full distance of the race without a tire change or without Bablot having to lift the bonnet.



BABLOT IN DELAGE WHO WON LIGHT-CAR RACE

Mishaps of the Race

There were many mishaps, of course, but only two of them could be classified as accidents. The Gregoire driven by Romano was overturned and was put out, while on the first lap Zuccarelli in a Peugeot hit a tree, which smashed his car. Robinson of the English Calthorpe team, made the fatal mistake of putting water in his car in place of gasoline, which put him out of the running. Hancock in the Vauxhall, was stopped by a broken ball race on the motor shaft, while Fletcher of the Calthorpe, broke a gasoline line.

The race demonstrated that it is a far different proposition to drive a small car than handling the wheel on a grand prix racer, for this contest saw three of the old stars eliminated early in the running. Louis Wagner, winner of the American grand prix and once winner in the Vanderbilt, undertook to drive an Alcyon. However, he only got the car 24 hours before the race, and that did not leave him time to get accustomed to it. He started, however, but quit before the end of the first lap. It was about the same story with Hemery, who was in a Gregoire. He, too, was unprepared for such a battle, and the judges never saw him after he left the tape the first time. The veteran Hanriot was in a Peugeot, but was eliminated by tire trouble, which was coupled with his motor seizing.

With all the old, world-famed firms standing proudly aloof, the forty-four entries for the French light-car race constitute a remarkable record. Here lies the significance of the race. It was organized to suit the most popular type of car in Europe: the four-cylinder model of 4-inch bore or under, rated here at anything from 15 to 18 horsepower and selling from $1,200 to $1,600, chassis with tires.

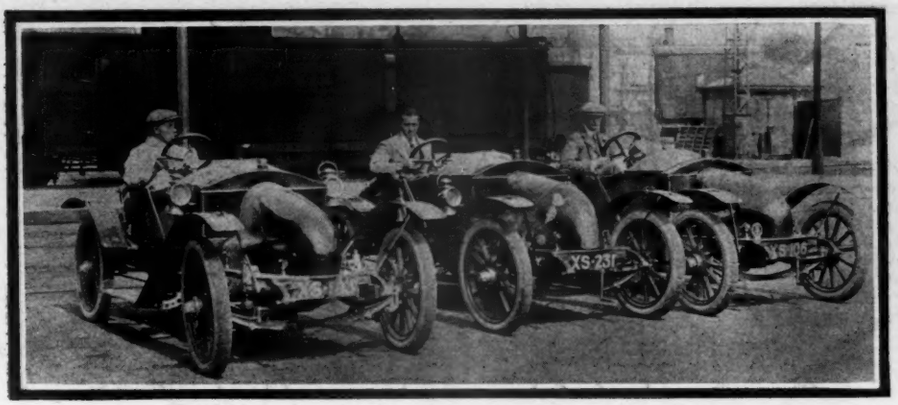
Conditions of Race

By fixing the cylinder area at 3 liters, 183 cubic inches, imposing a minimum weight of 1,763 pounds, and stipulating width of body, size of mudguards, and running boards, it was possible for every manufacturer in Europe to enter a standard car with the minimum of changes. The young, energetic firms, having been the first to realize European needs, responded readily, whereas such leaders as Panhard, Renault, Delaunay-Belleville, Dietrich, de

CONSTRUCTIONAL DETAILS OF THE CARS THAT WERE ENTERED IN THE FRENCH ROAD RACE THAT WAS

Car	Country	Number entered	No. of cylinders	Bore	Stroke	Cylinders, how cast	Valve location	Ignition	Oiling	Carburetor
Delage	France	4	4	3.14	5.86	In pairs	Horiz. in head, 2 per cyl.	Bosch double, 2 plugs	Pressure	Claudet
Gregoire	France	4	4	3.14	5.86	In pairs	Opposite sides, 2 per cyl.	Bosch double, 2 plugs	Splash	Zenith
*Sizaire-Naudin	France	3	4	3.07	6.14	Sep., bltd. together	Opposite sides, 4 per cyl.	Bosch double mag., 3 plugs	Pressure	Zenith
Lion-Peugeot	France	4	4	3.07	6.14	V bloc	Horiz. in head, 2 per cyl.	Bosch double, 2 plugs	Splash	Claudet
Alcyon	France	3	4	3.34	5.19	Separate	In head, 4 per cyl.	Bosch double, 2 plugs	Pressure	Claudet
Cote	France	3	4	3.5	4.72	Separate	Tur. cycle	Bosch H. T	Pressure	Claudet
*Koecklin	France	1	4	3.5	4.72	Separate	Tur. cycle	2 U. H. magneto	Pressure	Longumare
Arrol-Johnston	England	3	4	3.4	5.18	In pairs	One side, 2 per cyl.	Bosch	Pressure	White & Popp
Vauxhall	England	1	4	3.54	4.64	En bloc	In head, 2 per cyl.	Bosch	Pressure	White & Popp
Calthorpe	England	3	4	3.2	5.9	En bloc	One side, 2 per cyl.	Bosch	Pressure	White & Popp
Sunbeam	England	1	4	3.14	5.86	En bloc	One side, 2 per cyl.	Bosch	Pressure	White & Popp
**Fif	Belgium	4	4	3.34	5.1	En bloc	Vertical, 2 per cyl.	Double, 2 plugs	Splash	Zenith
Excelsior	Belgium	4	4	3.34	5.1	In pairs	Superposed, 2 per cyl.	Bosch double	Pressure	Zenith
N. S. U.	Germany	3	4	3.5	4.72	In pairs	One side, 2 per cyl.	Bosch double	Pressure	N. S. U.
Mathis	Germany	1	4	3.14	5.86	In pairs	Opposite sides, 4 per cyl.	Bosch double	Pressure	N. S. U.
*Spa	Italy	1	4	3.34	5.19	In pairs	Opposite sides, 2 per cyl.	Bosch	Pressure	Claudet
*Ford	America	1	4	...	...	En bloc	One side, 2 per cyl.	Ford magneto	Splash	Kingston

*Did not start **Only two started



ARROL-JOHNSTON TEAM, REPRESENTING ENGLAND

Dion and Mors, although also making this principle that racing only helps the small type of car, held fast to their 3-year-old firms to come to the front.

The cars entered were representative of Europe's most popular type. They were not standard products; yet they were built on the lines of the standard models, and in very many cases the differences were only to be found in the motors. Competition is so keen that nearly every manufacturer produced a specially-designed motor developing from 50 to 70 horsepower. While there was a general use of ball-bearing crankshafts and light reciprocating parts, together with double ignition—one magneto firing two plugs simultaneously—and forced feed lubrication, the designs of the motors varied considerably. Gregoire, for instance, adopted the T-type with valves on opposite sides having the unusual diameter of 2.9 inches for a cylinder diameter of 3.14 inches; Sizaire adopted the same type of motor, but with four valves per cylinder instead of two. Delage preferred to mount the valves horizontally in the cylinder head in order to obtain a perfectly hemispheric combustion chamber; Mathis, one of the first firms to use double valves, also adopted a hemispheric type of combustion chamber with valves inclined in the head, two intakes being on one side of the cylinder and two exhausts on the other; Fif was another firm with valves in the head, but in this case the stems are vertical; Sunbeam has adopted the L type of motor, but in order to reduce the size of the pocket has considerably inclined the valve stem outwards; Calithorpe and Arrol-Johnston adhered to the classical method of L cylinders with valves on one side.

There were two sets of two-cycle motors entered, one being presented by Cote, and the other by Koecklin. The former is an old-fashioned firm taking part in the race more with view to demonstrating the reliability of the motors than with the hope of winning. The Koecklin is an entirely new motor, the patents of which are said to have been purchased by an important French firm. It did not have a chance to demonstrate its merits, being one of those scratched.

Ball-Bearing Motor

To reduce frictional losses to the minimum, an extensive use was made of ball bearings for the motor. Delage, who has used three-ball bearing crankshafts on his standard motors for some time, adopted five-ball bearings for his racers, for he is of the opinion that three bearings are not sufficient in view of the unusually heavy work the motors have to perform. The camshafts are also mounted on ball bearings. Gregoire made use of two-ball bearings for the ends of the crankshaft and a large plain bearing in the center. Lion-Peugeot, having a V-type of motor, used a two-bearing shaft, both running on balls. Koecklin and Sunbeam carried the shaft on five plain bearings.

Steel Pistons Used

Pistons machined out of the solid steel bar were used on the majority of the cars. By using special grades of steel, the most popular being the B. N. D., it was possible to obtain pistons of extraordinarily low weight, the thickness of the lower walls, in very many cases being only one-half a millimeter. An extensive use also was made of tubular or oval section connecting rods.

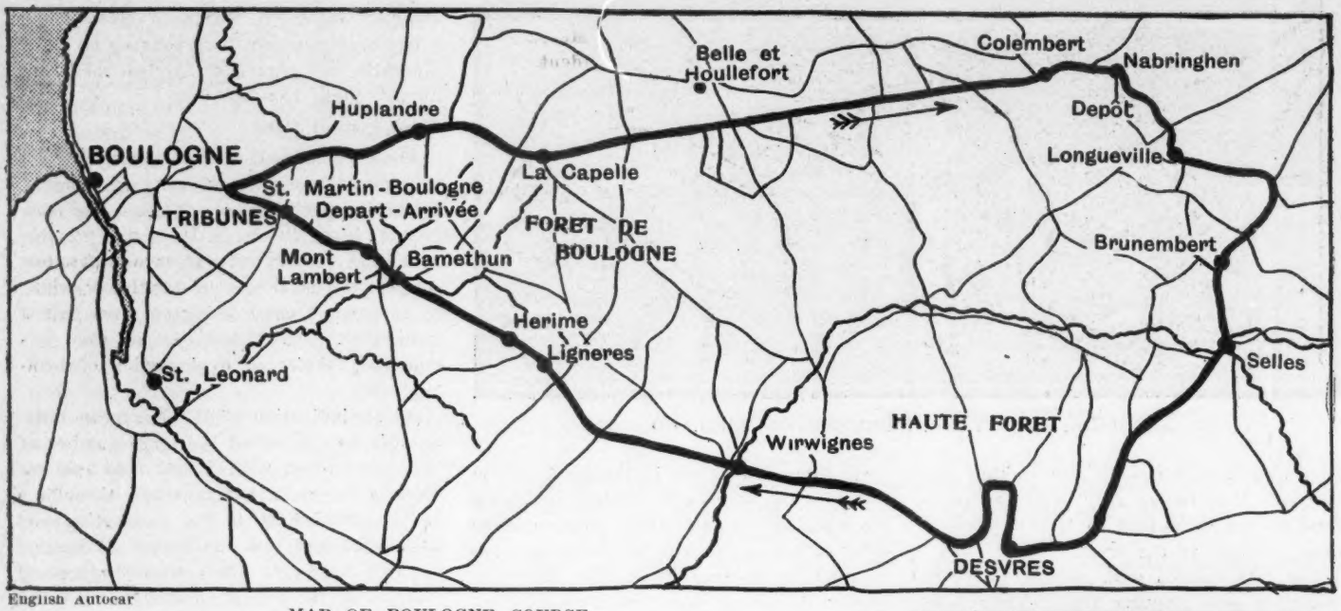
As an indication of the European tendency it may be noted the large number of cars were fitted with forced feed lubrication to the main bearings and through a hollow crankshaft to the connecting rod ends, although this shaft may be carried on ball bearings. This was the method adopted on the Delage models, the oil being delivered under pressure to all bearings and up the hollow connecting rods to the wrist pins. In addition to the lubricating of the cylinder walls by the oil splashed out of the bearings, there was a separate lead to each of the cylinders on these cars. It should be noted, too, that the pressure system adopted was that used on the respective firm's standard models. The majority of the manufacturers made use of a high-tension magneto firing two plugs per cylinder simultaneously. Sizaire-Naudin, in addition to this double Bosch magneto carries a second one of the self-starter type; the motor thus had three ignition systems—double plugs, single magneto plugs, or by storage battery on the same set of plugs. None of the Sizaires started.

Two Chain-Drive Types

There were only two sets of cars with final drive by side chains. Lion-Peugeot always has preferred the chain for racing, although giving its customers the option of either chain or shaft. The Koecklin, the second chain-drive car, was fitted with a Stabilia underslung chassis very similar to the American made in the United States. These two cases are the exception

RUN OVER THE BOULOGNE COURSE LAST SUNDAY AND WHICH WAS WON BY BABLOT IN A DELAGE

Cooling	Fan	Clutch	Gearset	No. of speeds	Direct on	Drive	Tires	Wheels	Wheelbase	Tread	Weight
Thermo-syphon	None	Cone	Selective	4	4th	Shaft	32.2x4.7	R. W. wire	108	51	2,270
Pump	None	Cone	Selective	4	3d	Shaft	34.44x4.13	Riley wire	110	51	1,873
Thermo-syphon	None	Single dry plate	Selective	4	All direct	Shaft	33x4.7	R. W. wire	118	52	2,400
Pump		Cone	Progressive	4	4th	Chain	31.8x3.5	R. W. wire	94	53	1,873
Pump		Disk	Selective	4	4th	Shaft	32x4.7	R. W. wire	112	51	2,010
Thermo-syphon	None	Cone	Selective	4	3d	Shaft	32x4	Riley wire	102	52	1,880
Thermo-syphon	None	Cone	Selective	5	2 direct	Chain	36x4.7	Wire	118	57	1,765
Thermo-syphon		3-plate	Selective	4		Shaft		Sankey detach.	96	52	1,940
Pump		Disk	Selective	4	3d	Shaft	32x4.1	R. W. wire	115	52	2,100
Thermo-syphon		Disk	Selective	4	3d	Shaft		R. W. wire			2,000
Pump		Cone	Selective	4	3d	Shaft	32x4.1	Sunbeam wire	108	54	2,200
Thermo-syphon		Disk	Selective	4	3d	Shaft	32x4.1	R. W. wire	102	51	2,028
Thermo-syphon		Cone	Selective	3		Shaft	32x4.1	Adex demount.	103	55	2,425
Thermo-syphon		Disk	Selective	4	4th	Shaft		Demountable	125	53	2,250
Pump		Cone	Selective	4	3d	Shaft		Demountable			2,300
Pump		Disk	Selective	4	4th	Shaft		Demountable			2,120
Thermo-syphon		Disk	Planetary	2		Shaft	31.8x3.5	Wood	98	55	1,430



English Autocar

MAP OF BOULOGNE COURSE

which go to prove the rule that shaft drive is general throughout Europe.

There was little that is distinctive in clutches, transmission and final drive. While very careful experiments had to be made in order to arrive at the correct gear ratios for this hilly course, the design is standard in nearly every case. With the exception of Ford with two speeds, Excelsior with three and Koecklin with five, all the entrants made use of the four-speed gear boxes. As there were a few straight-away down grades, several firms had direct drive on third with a geared-up fourth. Delage made experiments with a five-speed gearbox, but after trials on the course returned to a four-speed set with direct drive on the fourth.

Drivers are unanimously of the opinion that the course is one of the most difficult to be found in France. Louis Delage, who spent more time on the course than any other engineer, stated that his drivers made sixty gear changes per round. As the course only measures 32.3 miles, this is sufficient evidence of its hilly and winding nature. An instance of the care taken in preparing for the race can be found in the fact that Delage, after completing all his cars, changed the gearsets in order to have a straight-through movement from third to fourth. With the cross-over movement he estimated that his drivers would lose 1 second per change, whereas with the lever going straight through there was no need to raise the foot off the accelerator.

Wire Wheels Popular

Wire wheels were used with hardly an exception. Rudge-Whitworths were on the first four to finish. Both in France and England they are in favor for touring purposes, although their extra price limits their application a little in the former country. For racing, however, continental manufacturers are convinced that they are indispensable and will no longer accept demountable rims. It is an admission of which England is proud, for, although France used wire wheels years ago in racing, it is the Englishman who produced the demountable type. At the present time all the continental firms buy their wire wheels in England.

The rules of the race required all work on the cars to be done by the driver and his mechanic, and to prevent fraud only two tire and gasoline stations were established. One of these was opposite the grandstands, near Boulogne, and the other half way around the course. According to officials, the exact distance of the course

ORDER OF STARTING

The following is the order in which the numbers were drawn, the first man going away at 8 a. m., and the others following at intervals of 1 minute:

No.	Car	Driver
1	Gregoire	Philippe De Marne
2	Fif	Van Nuffel
3	N. S. U.	Hugo Storr
4	Lion-Peugeot	Boillot
5	Excelsior	Paul Riviere
6	S. P. A.	Jean De France
7	Arrol-Johnston	Reid
8	Calthorpe	Russel Fletcher
9	Ford	Henry Depasse
10	Delage	Bablot
11	Mathis	Mathis
12	Sizaire-Naudin	George Sizaire
14	Vauxhall	A. J. Hancock
15	Koecklin	A. G. Koecklin
16	Cote	Delpierre
17	Sunbeam	Louis Coatalen
18	Alcyon	Barriaux
20	F. I. F.	Haubourdin
19	Gregoire	Romano
21	U. S. U.	Garcet
22	Lion-Peugeot	Goux
23	Excelsior	Arthur Duray
24	Arrol Johnston	De Resta
25	Calthorpe	Harry Robinson
26	Delage	Guyot
27	Sizaire-Naudin	Naudin
28	Cote	De Vere
29	Alcyon	Louis Wagner
30	Gregoire	Porporato
31	F. I. F.	Gabriel
32	N. S. U.	L. Clement
33	Peugeot	Zuccarelli
34	Excelsior	Langlois
35	Arrol Johnston	Hodge
36	Calthorpe	Fred Burgess
37	Delage	Thomas
38	Sizaire-Naudin	Leboucq
39	Cote	Olier
40	Alcyon	Page
41	Gregoire	Hemery
42	F. I. F.	Simon
43	Lion-Peugeot	Rene Hanriot
44	Excelsior	De Woemont
45	Delage	Rigal

1—REED; SEVENTH; 2—BURGESS, SIXTH; 3—MATHES, THIRTEENTH

1—RESTA, EIGHTH; 2—DE MARNE, NINTH; 3—HODGE, ELEVENTH

is 32.3 miles, which being covered 12 times gives a total of 387.6 miles. Measurement made by Motor Age correspondent showed the total distance to be 2 miles short, but the results are sufficient in agreement to allow the official figures to be accepted.

In addition to the long distance test it was decided at a late date to hold short-distance speed trials on Monday, June 26. These consisted of 3 kilometers—1.86 miles—on the level with flying start; 2 kilometers—1.24 miles—on a 12 per cent grade with standing start, and 546 yards on a 12 per cent grade with standing start and finish.

On the day of the race the course was guarded by 750 gendarmes, and stout barricades were erected throughout every village, on the turns and in front of every cross or entering road. The course was treated with 100 tons of calcium chloride, this being a cheaper and less objectionable dust-preventer than tar.

The Winning Delages

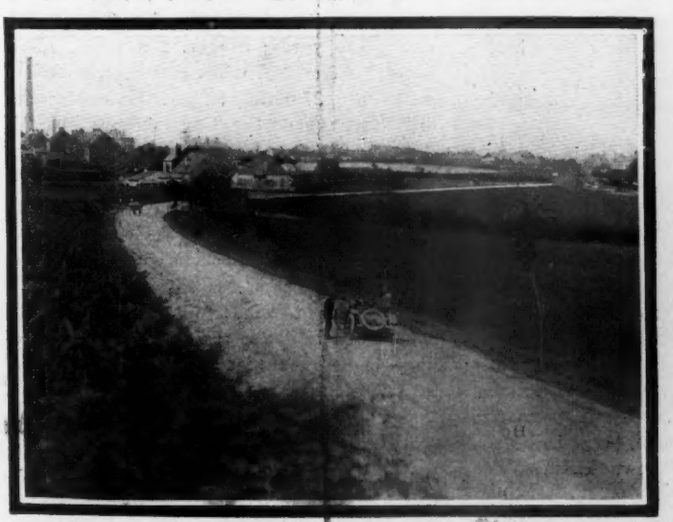
Having won the voiturette grand prix in 1908, Louis Delage set his heart on securing first position in the light-car race at Boulogne. The four cars which he built for this event have four-cylinder motors cast in pairs of 3.14-inch bore and 5.86-inch stroke, this giving exactly the 3 litres, 183 cubic inches, cylinder capacity allowed under the rules. The valves are carried horizontally in the head and are operated from camshafts on opposite sides of the motor through a rocker arm mechanism. The valve diameter is not excessive, being 2.3 inches, compared with 2.9 inches adopted by some other firms for motors of equal bore. But if the valve diameter is not very large, the form of the combustion chamber is excellent, there being no pockets and nothing to prevent the free entrance and exit of the gases. The spark plugs, two for each cylinder, are carried in the head, and are fired simultaneously from a high-tension Bosch magneto.

Delage, who has made a certain use of ball bearings in his standard motors, has adopted them throughout for the racers, the crankshaft being carried on five ball bearings, and the camshafts also running in ball bearings. To allow variations in the timing, the cams are keyed on their shafts. Reciprocating parts are kept as light as possible, the pistons being of B. N. D. steel with the lower portion of their walls only ½ millimeter in thickness, and the connecting rods of tubular section, also of B. N. D. steel.

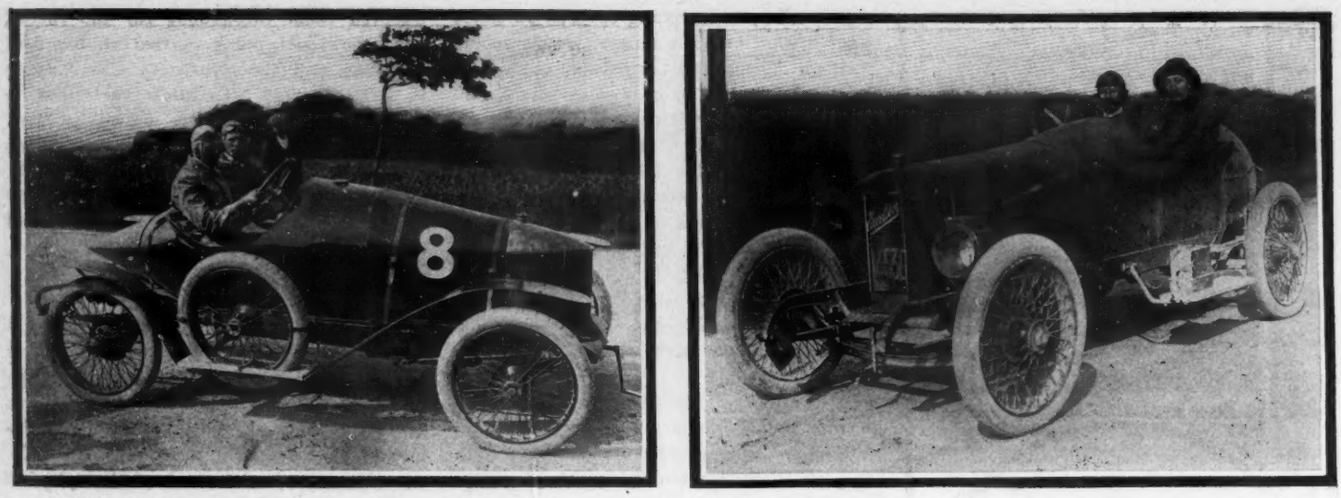
Details of the Motor

Lubrication is under pressure throughout the motor, an oil pump being driven off one of the camshafts and supplying the lubricant through the hollow crankshaft to the connecting rod ends and up the connecting rods to the wrist pins. In addition there is a lead to each of the cylinder walls. A Claudel carbureter has been fitted. Cooling is by thermo-syphon without the use of a fan, the radiator being V-shaped and of only slightly larger capacity than the one used on the firm's standard cars of the same cylinder bore.

As the Boulogne course is a decidedly hilly one, a four-speed gearset was used; but instead of a geared-up fourth, as adopted by most of the competitors, direct drive is on this gear. In practice it was found that it is necessary to make sixty gear changes per round of 32 miles in order to get the best results out of the motor, and on this account the selective change speed sector has been specially designed to give a fore-and-aft movement for third and fourth gears, and the brake lever has been mounted separately so as not to interfere with the movements of the driver when changing. Final drive is by propeller shaft similar to the standard models. The distance rods are designed to exert a downward effort on the rear axle, and are fitted with universal joints at their forward end so that there may be no braking effort on the springs. Rudge-Whitworth wire wheels are used, the dimensions being 820 by 120 rear and 815 by 105 in front. The total weight of the car without spares is 2,270 pounds, which



TWO VIEWS OF BOULOGNE COURSE OVER WHICH LIGHT-CAR RACE WAS RUN



THE CALTHORPE OF ENGLAND AND THE EXCELSIOR OF BELGIUM IN FRENCH RACE

is slightly in excess of that of most of the racers. The increased weight may be accounted for by the motor, for with the exception of the reciprocating parts no attempt has been made at metal paring, and the large tanks on the dashboard with a capacity for covering the 390 miles without refilling.

Normal Type of Body Used

While most French makers are of the opinion that stream line bodies are advantageous, Delage is convinced that they add nothing to the speed of a car under ordinary road conditions. As spare wheels and mudguards were carried, the advantages of the stream-line body were nullified. Thus the lines of the cars are normal with the exception of the V-type of radiator.

Results of Speed Trials

Boulogne, France, June 26—Special cablegram—After a day's rest the contestants in the small-car race yesterday were called out today for the short distance speed trials over a portion of the course. There were two events, one a flying kilometer and the other a 2-kilometer hill dash. In the former Boillot in the Peugeot carried off the honors by making the distance, 5/8-mile, in :28⅖. In the hill test it was Robinson in an English Calthorpe who showed the fastest pace. The best times in the two events were as follows:

FLYING KILOMETER

Car and driver	Time
Boillot, Peugeot	:28⅖
Wagner, Alcyon	:30⅕
Burgess, Calthorpe	:31⅖
Robinson, Calthorpe	:31⅘

HILL-TEST, 2 KILOMETERS

Robinson, Calthorpe	1:57
Zuccarelli, Peugeot	1:58
Burgess, Calthorpe	1:58⅖
Boillot, Peugeot	2:03⅖
Delpierre, Cote	2:08⅗

DEATH OF HENRY U. PALMER

New York, June 24—Henry U. Palmer, vice-president and treasurer of the Palmer & Singer Mfg. Co., of this city, died last Tuesday. Mr. Palmer was one of the most prominent figures in eastern trade circles and identified with the manufacture of Palmer & Singer cars for several years.

England Will Repeat Stock-Car Race

Recent Event Which Was Won by the Star so Successful Similar One Will Be Run in Near Future—Contest Marked by Its Freedom From Tire Troubles—Only One Puncture

LONDON, June 14—England's experiment in running a stock-car race on Brooklands track, which was completely reported by cable in the June 22 issue of Motor Age, proved so successful that a similar event is proposed for the near future. The Royal Automobile Club has found that a stock-car race involves little expenditure on the part of the manufacturers and with the facilities at Brooklands a minimum amount of organization is requisite.

The race was run yesterday and was at a distance of 277 miles, the rules requiring that the contesting cars be stock. Twenty-two cars were entered, twenty-one started and the winning Star averaged 56.247 miles per hour. It is interesting to note that the winner of the race, C. Cathie, was an amateur driver, and his success therefore was a very popular one. From the table which follows it will be seen that the first and third cars home were separated by a time interval of only 3 minutes 1⅗ seconds. Summary:

Pos.	Driver and Car.	Time. H. M. S.
1—C.	Cathie, Star	4:55:09⅕
2—G.	Tysoe, Singer	4:57:25
3—R.	Lisle, Star	4:58:10⅘
4—G.	Usmar, Gladiator	5:02:53⅕
5—L.	G. Hornstead, Armstrong-Whitworth	5:10:50⅕
6—E.	W. Brooks, Vinot	5:11:56
7—A.	Woodfield, Iris	5:33:00⅖
8—W.	Scott, Argyll	5:36:23
9—R.	Selz, S. C. A. R.	5:39:32⅘

From this table it will be seen that the first three cars were of British manufacture, and out of the first nine six were also of British origin.

At the time the ninth car finished, namely, 7 minutes past 4, there still were five machines running to finish, these being the following: S. C. A. R., two Thames, one Argyll and one Peugeot.

Immediately after the start Cathie in the Star took the lead, doing the first lap at 50½ miles per hour, and the second at 59 miles an hour, but after the first ten laps one could perceive that the majority of competitors were keeping their cars well in hand.

After half an hour's running Bianchi, driving the Crossley, went to the front, and also the Thames car, driven by C. M. Smith, which took the lead with laps at 57½ miles an hour; however, a broken inlet valve cotter on this machine forced a temporary retirement, which lost this car any chance of success. The 100-mile point clearly indicated the ultimate result, and at this period the two Stars and the Singer took up the lead and continued to do so until the finish.

After 4 hours running the Singer was going faster than any car at any time during the race, some of the laps being done at 62.73 miles an hour, the mileage at 4 hours from the start being: No. 11 Star, 224 miles, 617 yards; No. 9 Star, 221 miles, 156 yards; Singer, 218 miles, 1,347 yards. After 250 miles had been covered, with only 27 miles to go, the order was still unchanged, the times being: No. 11 Star, 4:27:3⅕; No. 9 Star, 4:30:29⅖; Singer, 4:31:7⅘.

It was not until 11 minutes of the finish and during the ninety-fifth lap that the Singer overtook the second Star car. The times and figures for the last 50 miles were watched with great interest, and there is little doubt that the Singer would have come in the winner had the driver let out at an earlier period.

The stroke of the Star winner was 120 millimeters and the stroke of the Singer 130 millimeters. The gear ratio of the Star was 3 to 1, and of the Singer 3½ to 1. The wheel base of the Star 9 feet 10 inches; Singer, 9 feet 6 inches. Tires, Star, 810 by

90; Singer, 815 by 105. The whole annals of motor racing never have before furnished such an example of immunity from tire troubles, there only was one puncture or difficulty with tires during the whole of the day, a Vinot car, No. 18, sustaining a puncture.

It is interesting to note that three of the cars were lubricated with castor oil, a hint no doubt taken from aeroplane practice. One of these cars was the No. 5 Peugeot, but the use of this cannot be termed successful, for the motor ran hot, and then was filled with ordinary lubricat- made 57 miles 171 yards in the hour, also ing oil. However, the Crossley, which made 57 miles 171 yards in the hour, also used castor oil.

The two Martini cars, Nos. 12 and 21, both retired from the race, one owing to trouble with the big ends of the connecting rods, and the other owing to broken universal magneto coupling. The Crossley broke down owing to the strap holding down the magneto breaking, and although the runners had any amount of spare parts no spare magneto strap was available. The Arrol-Johnston car, No. 1, also retired owing to trouble with big end bearings.

The mishap to the Crossley car was particularly unfortunate, as this car had done some remarkably fast times previous to the race, and in all probability had this car continued to run an average speed of nearly 60 miles an hour would have been attained.

Car Retailers Gather in Detroit

Factory Heads Kept Busy Telling Agents of Fine Points of New Models—E-M-F Holds Its Summer Convention—Everitt Announces Six-Cylinder Model—Plans for Big Show

DETROIT, Mich., June 28—Detroit has enjoyed another week of remarkable nature, due to the presence in the city of a record-breaking number of retailers from all parts of the country. One of the features of the season has been the growing disposition of the factory forces to get into closer touch with the men who dispose of their cars. To this end, a visit of at least once every 6 months is being encouraged. During June and July each manufacturer's sales department gives up most of its time to the entertainment of these visitors and the strengthening of trade relations with them.

The most noteworthy party was that of Carl H. Page, the Chalmers dealer in New York. Mr. Page brought on his entire force of salesmen and sub-agents from his territory in New Jersey and New England. They came in a special car, and a program was arranged for their benefit. In addition to the social features, Mr. Page's staff was addressed by Chief Engineer Dunham, Sales Manager Lee Counselman and President Hugh Chalmers, the speakers treating in an interesting and confidential way of the problems which factory and dealers have to face.

E-M-F Summer Convention

The entire week at the E-M-F company was given up to the annual summer convention of branch managers. The first half saw the branch managers of the firm's western division in attendance, these being relieved on Thursday by the eastern contingent. More than forty branch managers were in attendance, as well as some of their salesmen and independent dealers. Sales Manager Paul Smith was in immediate charge of the program, which included trips through the various Detroit plants of the company and a special course of instruction at plant 3, where several models of the new Flanders 20 are being manufactured at rapid rate.

One of the events of the week was the 1912 announcement of the Metzger Motor Car Co., which has decided to supplement its Everitt 30 during the coming year with a six-cylinder car of 48 horsepower, and a four or 36 horsepower. The new cars will be constructed entirely of chrome-nickel steel and will be equipped with self-starters, operated by push-buttons from the seat. A unique feature of the six is the fact that the cylinders will be cast en-bloc.

The Metzger company has practically concluded an entire reorganization of its selling staff, cutting down very considerably the territory allotted the original dealers, and increasing the number of retailers dealing direct with the factory. This, in fact, has been a noteworthy tendency of all manufacturers this year.

The General Motors Co. has decided that the building at 127 Woodward avenue, across from the Pontchartrain, is now needed entirely for office space. As a result, the salesrooms, formerly located on the ground floor, have been combined with the Buick salesroom at 750 Woodward avenue, while President Neal and his staff secure a considerable amount of additional room in a remarkably central location. The General Motors Co. also has leased the abandoned plant of the Beyster-Detroit Co. at Woodward and Burroughs avenues, and is engaged in altering it to fit the needs of an up-to-date service station. Much of the former occupants' machinery will be used for this purpose and a considerable amount additional installed under the management of John T. Marshall, who will have charge.

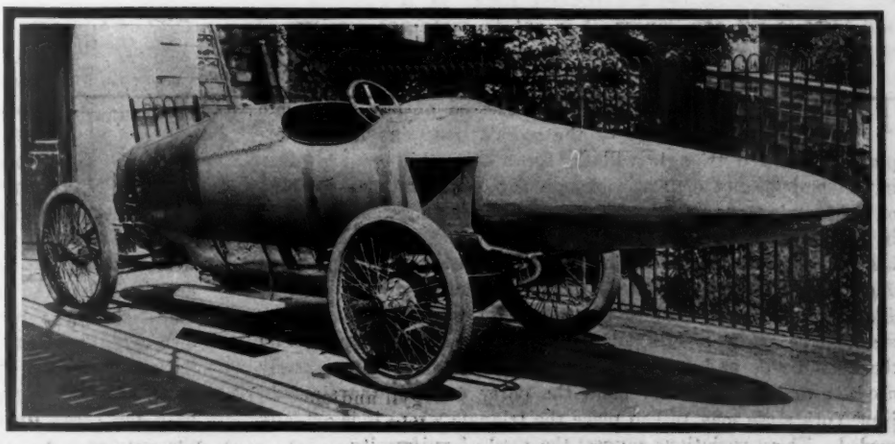
Making Show Plans

Manager Walter Wilmot, of the state fair show, announces that he has decided to place the entire upper floor of the motor building at the disposal of the Detroit manufacturers, who have requested it. The lower floor will be assigned to dealers, and a meeting will be held this week at which the space will be apportioned. The show was comparatively a new thing last year, and several of the local manufacturers failed to make exhibits. As a means of getting into touch with state dealers it was a proven success last season, and there will be but few absentees this year. The districting of the exhibits as Detroit and non-Detroit made will also afford an interesting commentary on types and statistics.

An interesting event of the past week was a ceremonial at the Thompson Auto Co., Michigan distributors of the King. Coincident with the coronation ceremonies in London occurred the coronation of the car which the firm represents. Festivities lasted through the week, the climax coming with the placing of an elaborate diadem on the car's radiator.

THE BIG FIAT RACER

London, June 17—Much comment is heard as to what the big Fiat racer now practising on Brooklands will show under test in speed trials. The car has a four-cylinder motor with 190 by 250 millimeter cylinders. In inches these measurements are: 7.48 bore and 9.84 stroke. Each cylinder has two intake and two exhaust valves operated from an overhead camshaft.



GREGOIRE, WHICH RAN FIFTH IN FRENCH ROAD RACE

MOTOR AGE
Published Weekly by
THE CLASS JOURNAL COMPANY
910 South Michigan Avenue CHICAGO
NEW YORK OFFICE
239 West 39th Street
SUBSCRIPTION RATES
United States and Mexico
$3.00 per Year
Other Countries including
Canada $5.00
Entered as Second-Class Matter September 19, 1899, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879

Uniform Good Roads Are Needed

DANGER signs for the guidance of motorists throughout every state in America should be of uniform design, color and size. Today over a score of different clubs are erecting danger and direction signs in as many different states, but without any plan of uniformity. A club in Wisconsin decides what it thinks best as a sign for such danger points as a concealed corner, a hidden sharp turn, a hidden steep, winding hill, or a dangerous bridge; in Illinois a different danger signal is employed; in New York a still different kind is used; Maine has its own danger signs; and in California a different design is employed. The net result is a dangerous condition to the summer tourist who expects to travel through perhaps a dozen different states on his holiday vacation. It is up to the motoring interests to protect such tourists, but what kind of protection are they given where a different danger sign is used in almost every state?

BUT the matter is getting almost beyond the confines of motor clubs. A few years ago all of the danger signs erected were erected by the clubs; but within the last year or so the state and county authorities have taken up the matter of danger signs and in not a few places they are erecting danger signs of their own creation and which are not in conformity with any recognized sign. So choatic is the situation becoming that quick action is needed, and not only quick but concerted action is imperative. If the motor clubs are not strong enough to get the proper attention, then the manufacturers should take the matter up and recommend, through their various organizations, a definite form of danger signal for the different road conditions.

UP to the present the red triangle has been generally accepted as the best danger sign. It is a universal sign and can be distinctly seen, particularly if placed upon a white post and at a point where it is not hidden by trees or buildings. This sign should be painted red only on the side seen by the motorists when approaching the danger that it gives warning of. It is a mistake to paint both sides of the triangle red, because when traveling in the reverse direction there is in all probability not any danger. When the red triangle shows in the reverse way and there is not any danger, it is apt to encourage carelessness on the part of drivers.

THE question has been generally discussed of late that there should be modifications of the red danger triangle. To explain: The red triangle will do for a steep hill or bad turn, but is perhaps not emphatic enough for a bad railroad crossing or a concealed cross road. There are different degrees of danger in roads. Often the red triangle is used and when the driver has slowed down for the triangle and passed over the so-called danger spot he has wondered why the danger sign was used at all. There is always in this danger sign work the human element. The party erecting danger signs in Illinois may err on the human side and erect danger signals where they are scarcely needed; and on the other hand the party erecting the signs in New York state may fail to place the triangle where it is actually needed. These variations suggest the need of uniformity.

REGARDING the degree of danger in connection with these signs and the use of different danger signals, Motor Age feels that it would be a serious error to adopt more than one danger signal. To say the least, it would be confusing, and anything that tends to confuse must be eliminated. The best way to cope with this problem would be the use of three different sizes of the red danger triangle. Have the standard size for ordinary danger work; for specially dangerous places use what might be called size and one-half; and for exceedingly dangerous places use the double size. If in addition to this the local authorities wish to add a bar beneath the red triangle describing the danger spot, such as Steep Hill, Dangerous Curve, Narrow Bridge, Precipice, etc., it is quite permissible to do so, but under no condition change from the red triangle.

IN addition to uniformity for danger signs there should also be uniformity in signs for schools, churches, hospitals, villages and prohibited roads. The red circle with a bar beneath bearing the word School should be placed at a certain distance at each side of the school house; the red diamond indicating the zone of quiet around a hospital with a bar bearing the word Quiet should be standardized; the red disk is satisfactory for prohibition marking any road closed to motorists, and for churches the red square with the word Church on the bar beneath will suffice.

The Good Roads Germ Arrives

THE good roads germ has inoculated itself into the minds of thousands of motorists during the last year. Before that time the motorists were afraid to get busy. Whenever anybody talked good roads the car owners whispered that it was all right and they would give their support, but it must not be let known that they were back of the movement; otherwise the farmers would immediately go against the idea. This conception of affairs was all wrong. Events of today prove it. The good roads idea did not develop until the car owners got busy, and as soon as they got busy and showed some real genuine enthusiasm, then the farmer woke up and started talking good roads. He did not start rapping the good roads movement of the motorists, but actually fell in line and got into the band wagon. It was another demonstration of the old adage, "A faint heart never won a fair lady." The recent wakening to good roads has come from unexpected corners of the country. Who expected Iowa to become a real leader? Who imagined that Georgia would outdistance many of the more populous and many times more wealthy states? All over the country it has been the same story, the enthusiasms coming from least expected quarters. With a few exceptions, however, it has been demonstrated that the good roads movement has shown the greatest activity where the car has taken good hold. In Iowa and Kansas, and Nebraska, and Texas, the people in small cities and towns own cars, and there are the people who are now laying the foundations for good roads in these states. The good roads movement has not originated with the selfish, wealthy motorists, but with the great American masses who own cars and use them in the country.

Glidden Case Is Dismissed by Court

NEW YORK, June 26—Judge Joseph Marean of the supreme court of New York at Brooklyn today closed another chapter in the case of H. O. Smith vs. the American Automobile Association, the matter in question being the dispute between the Premier Motor Mfg. Co., Indianapolis, Ind., and the Chalmers Motor Co., Detroit, Mich., relative to the holding of the Glidden trophy. Justice Marean today dismissed the complaint without costs to either party against the other and without any opinion or findings, the decision lets the jurisdiction of the contest board stand undisturbed.

On April 7 the court ordered H. O. Smith to furnish names of owners of Premier sixes shipped from the factory between May 4 and June 14, 1910. The disposition of such owners was to be taken as to the stock equipment and submitted to the court on June 7, 1911. At request of Mr. Smith the hearing was adjourned to June 19 and again to June 26. On June 26, today, no dispositions were taken and the court dismissed the case as above stated, the trophy remaining in the possession of the Chalmers Co.

This court controversy over the possession of the Glidden trophy following the 1910 competition for it dates from June 30, 1910, when Referee Whiting awarded the trophy to the Premier entry, the Chalmers entry being second. The award was immediately protested by the Chalmers company on the ground that the Premier entry was not stock, owing to the equipment of an auxiliary oil tank and pump for motor lubrication. The Chalmers appeal was heard before the contest board of the A. A. A. in New York, July, 1910, and the board overruled the referee's finding and awarded the trophy to the Chalmers car. The court litigation immediately ensued.

The case first came up in the circuit court of New York and the court decided that it did not have any jurisdiction in the case, owing to the fact that the American Automobile Association is a sport-governing body. After this the matter was carried to the supreme court of the state of New York and the case was heard before this court in April, 1911, after which an adjournment was made to take the dispositions already referred to. It is not known whether the matter will be dropped or if it will be carried to the supreme court of the United States.

BAKERSFIELD ROAD RACE PLANS

San Francisco, Cal., June 27—With the Fourth of July races at Bakerfield in California oil fields but a few days away, it is impossible to secure any accurate idea of the cars that will compete. Enough is known, however, to indicate that there will be some classy cars in big events. Most interesting of these will be Bert Dingley's Pope-Hartford, winner of the free-for-all in the recent Panama-Pacific road race. A National four will be driven by Harvey Herrick, who drove the Kissel that won last Los Angeles-Phoenix road race. This National is the same car that Wilcox used in breaking Oldfield's record in the mile time trial. Louis Nikrent will drive a Buick and Earl Cooper a Pennsylvania six. An American is reported entered, to be driven by one of Bob Burman's former mechanicians. Other reported entries are E-M-F, Velie, Ford, Mercer, Haynes, Knox and Stoddard Dayton.

The race has been gotten up by Kern County Merchants' Association and thousands of dollars have been spent in preparation. At the suggestion of the A. A. A. representative, roads have been built and new bridges constructed to eliminate danger.

To the winner of the free-for-all will go $2,000 in cash, while to the winners of other races and the other cars inside the money there will be substantial rewards. In addition there is a magnificent trophy offered by William S. Levis.

There will be two races. The first will be for cars under 300 cubic inches, while the second will be the free-for-all. The distance for light cars will be 100 miles, while the free-for-all will be at 150 miles.

Coming Motor Events

July 1—Hill-climb, Upper Westchester Auto Club, Ossining, N. Y.
July 1—Baltimore hill-climb, Maryland Auto Club.
*July 3-4—Brighton Beach races, New York.
July 4—Hill-climb at Columbia, S. C.
July 4—Hill-climb, Automobile Club of Columbia, S. C.
July 4—Track meet and hill-climb at Davenport, Ia.
July 4—Track meet, South Jersey Motor Club, Mt. Holly, N. J.
July 4—Pottsville, Pa., track meet, Schuylkill Co. Centennial.
July 4—Kansas City track meet, Kansas City Auto Club.
*July 4—Road race, Kern County Merchants' Association, Bakersfield, Cal.
*July 4—St. Louis pleasure and commercial reliability run, Missouri Automobile Association.
July 4-20—Prince Henry tour, Germany.
July 7—Track race, Taylor Automobile Club, Taylor, Tex.
July 8 or 15—Track race, Norristown Automobile Club, Philadelphia.
July 9—French grand prix road races.
July 14—Reliability run for trucks of Quaker City Motor Club, Philadelphia.
July 15—Guttenberg track race, Henry Shaffer, promoter.
July 15-17—St. Louis reliability run, Missouri Automobile Association.
*July 17-22—Milwaukee reliability run, Wisconsin State Automobile Association.
July 17-22—Cleveland reliability run, Cleveland News, Cleveland, O.
*July 20-23—Minneapolis reliability run to Helena, Mont., Minnesota State Automobile Association.
July 21-22—Brighton Beach 24-hour race, E. A. Moross, promoter.
*August 3-4-5—Galveston Beach races, Galveston Automobile Club.
August 10-12-13—Races on Gearhart beach, Portland Automobile Club, Portland, Ore.
August 12—Worcester hill-climb, Worcester Auto Club.
August 12—Reliability run of Quaker City Motor Club, Philadelphia.
August 17—St. Louis reliability run, Missouri Automobile Association.
August 25-26—Elgin road races, Chicago Motor Club.
September 1—Reliability run for trucks of Chicago Motor Club, Chicago.
September 1—Oklahoma reliability run, Daily Oklahoman.
September 2-4—Brighton Beach races, New York.
September 4—Denver track meet, Denver Motor Club.
September 7-8-9—Track meet, Minnesota State Automobile Association, Hamline track, Minnesota.
October 7—Fairmount Park road race, Philadelphia.
October 9-13—1,000-mile reliability, Chicago Motor Club.
October 16-18—Reliability run of Harrisburg Motor Club.
November 1—Track meet of Waco Automobile Club, Waco, Tex.
November 2-3-4—Reliability run of Quaker City Motor Club, Philadelphia.
November 9-11—Track meet, San Antonio Automobile Club.
November 7-10—Phoenix road race, Maricopa Automobile Club.
November 10—Track meet of Maricopa Automobile Club, Phoenix, Ariz.
November 27—Vanderbilt road race, Savannah, Ga.
November 30—Grand prix race, Savannah, Ga.
November 30-December 2-3—Los Angeles motordrome.
December 25-26—Los Angeles motordrome meet.
January 6-20—Madison Square Garden show, New York City, Automobile Board of trade.
March 13-20—Show of Boston Commercial Motor Vehicle Dealers' Association, Mechanics' building, Boston.
January 1-7—Grand Central palace show of Automobile Manufacturers of America, New York City.

* Sanction already issued

PROPOSES FEDERAL TAX

Washington, D. C., June 24—A bill has been introduced in the senate embracing provisions for the creation of a $10 per year tax on motor cars that are engaged in interstate commerce. The bill was introduced by Senator Simmons, of North Carolina. The clause covering the tax is included in a bill for the appropriation of $1,000,000 to improve the county roads used in the rural free delivery service. A section of the bill provides that the secretary of agriculture and the postmaster general report to congress within one year the number of miles of road improved, the cost of same, and the feasibility and desirability of a federal license tax on motor cars engaged in interstate travel, and such other information as they may have acquired in connection with the operation of this act, together with such recommendations as shall seem wise for providing a general plan of national aid for the improvement of postal roads in co-operation with the states and counties, and to bring about as near as possible such co-operation among the various states as will insure uniform and equitable interstate highway regulations, and for providing necessary funds for carrying out such plans of national aid, if it shall be deemed feasible to provide the same or any part thereof otherwise than by appropriation from the treasury for that purpose.

Preparing Course

CHICAGO, June 26.—Both the Chicago Motor Club and the Elgin Automobile Road Race Association now are actively engaged in preparing for the staging of the national stock chassis road races at Elgin, August 25-26, the former in completing its organization for the big event and soliciting entries, and the latter preparing the course for the speed battle and making a complete racing plant out of the 8-mile circuit used last year.

The Chicagoans have a good start in the entry line, seven already being booked, and there are indications that several more will be forthcoming in the immediate future. First to be enrolled were three Falcars for the Kane County cup race for the 231-300 class cars, with Greiner, Gelnaw and Pearce named as drivers. There likely will be a change in pilots, however, before the race, for Greiner robably will not drive in any more speed events at the request of his mother, while Gelnaw has renounced the racing game altogether, severed his connection with the Fal company and has gone on a long vacation in the west.

1—SCRAPING AND DRAGGING HOME STRETCH OF ELGIN COURSE. 2—BROAD AND HARD BACKSTRETCH; 3—LARKIN AVENUE NOW WIDE ENOUGH FOR FOUR CARS TO RUN ABREAST; 4—LEAVING WEST LEG. FIGS. A and D REPRESENT PRESENT WIDTH OF ROAD; B AND C LAST YEAR'S WIDTH

For Elgin Races

Hardly had the Falcar nominations been announced before another local concern, the Staver Carriage Co., came forward with its team, which likewise has been nominated for the Kane County. As yet Mr. Staver has not definitely decided on his drivers.

The Lozier has already entered Mulford in the Elgin National event for Saturday, August 26. More entries are expected in a few days, and assurances of support have been received from some of the prominent makers, which leads the club to believe a classier field will start this time than did last year. A radical departure from its previous system is announced by the American Locomotive Co., which has informed its local branch of its intention to enter three Alcos in the Elgin National instead of the one upon which it heretofore has depended. Harry Grant, Vanderbilt cup winner; Frank Lee, who has been Grant's mechanic in past events, and Harry Hartman are named as the men who will drive the Alco fleet. In addition to this announcement, the Lozier company has stated that it

5—CUTTING AWAY HILL ON ELGIN ROAD RACE COURSE NEAR THE GRAND STAND; 6—THE ELGIN COURSE IS WIDE ENOUGH FOR THREE CARS ABREAST; 7—A TYPICAL ROAD STRETCH ON THE ELGIN COURSE; 8—ROAD MAKERS WIDENING HOME STRETCH ON ELGIN ROAD RACE COURSE

will be in with at least two cars—probably three, now that others are going after the big cup so vigorously.

Out at Elgin the course is being transformed from an ordinary country road circuit into a racing plant which will compare favorably with anything in the country. The chief objection last year was that the homestretch was narrow and wavy, but so far the Elginites have expended $2,000 on this one leg alone.

For the past month the Elgin Automobile Race Association, which co-operates with the Chicago Motor Club in conducting the race, has had over forty men, twelve to fifteen teams, steam rollers, road scrapers, road drags, etc, at work on the course. At the present time the circuit is 5 miles an hour faster than on the days of the race last year. The Elgin association is not sparing any pains or money on the work. The home stretch, from what is known as Britton's gate past the grand stand to Hornbeck's curve, a distance of over 1 mile, has been widened, giving a roadway 60 feet in width for cars to drive upon. This is practically three times as wide as last year. Fig. 8 shows the teams, steam roller, etc., at work upon this stretch. Fig. 5 shows the hill that has been practically cut away just before reaching the grand stand in order to widen the road, and Fig. 4 shows the nature of the improvements. The old roadway extended from B to C, but the improved roadway is from A to D, or practically three times as wide. This will give one of the greatest speed stretches past the grandstand on any road course.

The worst turn on the course last year was at Udina, at the southwestern corner of the course. At this point this year the Elginites have cut into a field and used half of it for the turn. Three telegraph poles have been removed and when the work is completed the turn will be at least 80 feet wide. At McQueen's, at the northwestern end of the course, the turn is being widened considerably. The backstretch has required little work on it, for last year it was the best part of the circuit, the leg over which the most speed was made.

For 2 months all the remaining 8 miles of the circuit have been worked upon. Carloads of crushed stone have been arriving every week and these have been spread over the entire course, taking out all the undulations that cut down the speed a year ago. With the road in its present condition cars can travel at 80 miles per hour without rocking. All of the course has been widened from 4 to 6 feet as compared with last year. This has been done by the use of road graders.

The races are yet 2 months off, but the course is completed, and the heavy rains of the last few weeks have greatly aided in packing the surface. Already the oil for the entire course has been ordered and it will be oiled at least 6 weeks in advance of the race.

IOWA'S LITTLE GLIDDEN—CONTROL AT MAQUOTTA, IA.

Cadillac With a Clean Score Wins

DES MOINES, Ia., June 26—A Cadillac touring car is the winner of the second annual Des Moines Little Glidden tour, ending the 660-mile 4-day run without a single penalty from the run or technical committee.

The winning car was driven by D. S. Krudineir, Des Moines agent for the Cadillac. A Ford touring car and a Maxwell roadster pushed the winning Cadillac car hard for honors and came through the run and subsequent technical examination with but a point penalty apiece.

Twenty-six cars made the run and the affair was the most successful contest yet pulled off by Iowa motorists. Trophies were awarded to the winners at a big banquet and love feast given at the Hyperion Field and Motor Club Monday night. The run was a sanctioned event and was refereed by Earl Butler, of Des Moines.

The winners were as follows:

Sweepstakes trophy—No. 10, Cadillac, perfect.

Class 1A—No. 26, Ford touring car, 1 point penalty; No. 23, Hupmobile roadster, 5 points penalty.

Class 3A—No. 18, Maxwell roadster, 1 point penalty; No. 14, Buick touring car, 2 points penalty.

Class 4A—No. 10, Cadillac touring car, perfect; No. 4, Cole roadster, 149 points penalty.

Class 5A—No. 1, Stoddard-Dayton, 36 points penalty; No. 15, National touring car, 52 points penalty.

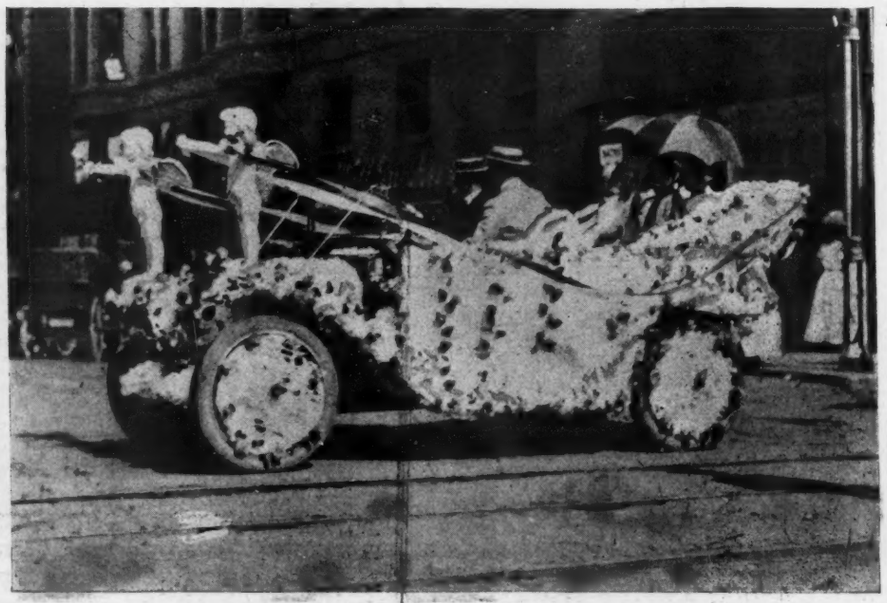
Class 6A—No. 6, Columbia roadster, 110 points penalty.

The road scores made by the various cars were as follows:

No. 1, Stoddard-Dayton, perfect; No. 2, Staver-Chicago, perfect; No. 3, Cole, 1,098; No. 4, Cole, 1; No. 6, Columbia, perfect; No. 7, Reo, perfect; No. 8, Mitchell, perfect; No. 9, Cadillac, perfect; No. 10, Cadillac, perfect; No. 11, Spaulding, perfect; No. 12, Spaulding, 2; No. 14, Buick, perfect; No. 15, National, 27; No. 16, Abbott-Detroit, 4; No. 17, Maxwell, perfect; No. 18, Maxwell, perfect; No. 20, Cartercar, perfect; No. 21, Flanders, perfect; No. 22, Flanders, perfect; No. 23, Flanders, perfect; No. 24, Hupmobile, perfect; No. 25, Ford, perfect; No. 26, Ford, perfect.

Tour a Pleasant One

The run left Des Moines Monday morning, following Bill Moyer, pathfinder, in



BLOOMINGTON PARADE—A BUSINESS CONCERN'S ENTRY

IOWA'S LITTLE GLIDDEN-PACEMAKING STAVER HAS TIRE TROUBLES

Iowa's Little Glidden Reliability Run

a Hudson, and made the run to Davenport over the river-to-river road the first day. This run approximated 190 miles. The going was fine all the way and not a car was penalized the first night. Most of the river-to-river road had been dragged the day before and farmers along the road gave the tourists a big reception.

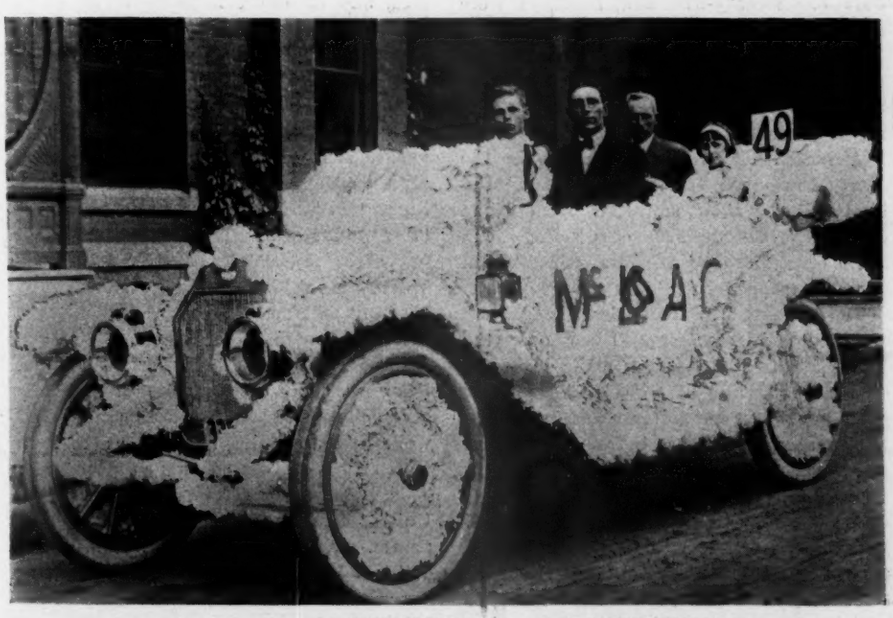
Tuesday was a lighter day for the tourists and they made the 113 miles from Davenport to Dubuque along the river without any trouble. Dubuque was the Tuesday night control.

Wednesday the Gliddenites got their hardest day's run to Spirit Lake. The distance is 215 but all the cars came through in good shape. From Dubuque to Waterloo the route was over the Hawkeye highway, the Dubuque-Sioux City road, and it was in good shape. Only in one or two places did the tourists encounter bad roads. Despite the good roads, the going was none too pleasant, however, on account of the unusually hot weather. The week was the hottest of the summer and the long grind of 215 miles was a hard one for the tourists. However, the beauty of the route was that the night control was at Spirit Lake, Iowa's finest summer resort.

BLAZING TRAIL FOR HOOSIERS

Indianapolis, Ind., June 26—A pathfinding party is covering the route selected for the Indiana four-states tour which will leave Indianapolis July 12. The route is approximately 1,300 miles long and the pathfinder is a Premier 6-60. There have been eighteen entries in the tour, which will be limited to cars manufactured in Indiana. The entries include five Great Western, two Lexington, two Auburn, two Cole, one Mais, one Davis, two Maxwell, two Parry and one McIntyre truck.

Principal cities and towns that will be reached are Greencastle, Brazil, Terre Haute, Paris, Ill., Danville, Champaign, Monticello, Decatur, Bloomington, Peoria, Springfield, Alton, East St. Louis, St. Louis, Troy, Mo., Quincy, Ill., New London, Mo., Hannibal, Monticello, Keokuk, Ia., Fort Madison, Burlington, Wapello, Muscatine, Rock Island, Davenport, Moline, Clinton, Dubuque, Galena, Freeport, Rockford, Elgin, Aurora, Chicago, Hammond, Michigan City, Laporte, South Bend, Logansport, Lafayette, Crawfordsville and Indianapolis.



BLOOMINGTON'S PARADE—McLEAN COUNTY AUTOMOBILE CLUB'S CAR

KNOX CLIMBS HILL FAST

Poland Springs, Me., June 26—The summer visitors at Poland Springs, one of the most fashionable summer resorts of the East, had a chance to see what real speeding in motor cars was like last week when the Maine Automobile Association held its hill-climb on Thurlow hill. Fred Belcher and J. J. Coffey, his team mate, were the stars, with four first prizes to their credit when the nine events were ended. It was an ideal day for a hill-climb. In one event Belcher skidded, hit a tree and was thrown about 30 feet but he picked himself up and, finding his big Knox was all right except for a slight bend in the axle, he started off again and won the prize for the fastest time regardless of class. Summary:

CLASS A, STOCK, $800 AND UNDER

Car and driver	Time
Ford, L. A. Peterson	1:15
Cameron, E. S. Cameron	1:19
Ford, A. M. Spear, Jr.	1:21
Hupmobile, M. S. Folins	2:11

CLASS A, STOCK, $801-$1,200

Reo, C. Darling	1:20
Cameron, A. White	1:25
E-M-F, L. C. Hibbs	1:28
Oakland, H. A. Bauer	1:34

CLASS A, STOCK, $1,201-$1,600

Oakland, H. A. Bauer	1:14
Oakland, J. S. Meader	1:29

CLASS A, STOCK, $1,601-$2,000

Velie, G. R. Wallace, Jr.	1:09
Buick, G. Jessop	1:17

CLASS A, STOCK, $2,001-$3,000

Knox, J. J. Coffey	1:02

CLASS E, FREE-FOR-ALL

Knox, J. J. Coffey	:58
Oakland, H. A. Bauer	1:06
Velie, G. R. Wallace, Jr.	1:08
Buick, G. Jessop	1:09
Oakland, J. S. Meader	1:10
Ford, L. A. Peterson	1:11
Ford, A. M. Spear, Jr.	1:19
Velie, P. B. Moulton	1:53

RECORD CLIMB

Knox, F. W. Belcher	:48
Velie, P. B. Moulton	1:04
Buick, G. Jessop	1:04
Velie, M. H. Luce	1:05
American, G. Merrow	1:10

EXHIBITION

Knox, F. W. Belcher	:49
Knox, F. W. Belcher	:50
Velie, G. Wallace, Jr.	1:03

MOTOR TRUCKS

Kelly, 2 tons	5:10

BLOOMINGTON CELEBRATES

Bloomington, Ill., June 26—The annual fete by the merchants and manufacturers of Bloomington, held the week of June 19-24, proved a great success, motor cars, as usual, playing a prominent part. The great event of the week was the motor floral parade which took place on June 22. The first prize was awarded to the Bloomington Country Club car. The second went to the McLean County Automobile Club, and the third to F. A. Dewenter, a local merchant.

BETWEEN OVERTON AND KEARNEY, NEB. SAMPLE MILE ROAD NEAR CENTRAL CITY, BUILT BY GOVERNMENT

Nebraska Singing Good Roads Gospel

Cornhuskers Accomplish Much in Arousing Enthusiasm—Big Convention Held at York With Idea of Getting Route From Omaha to Lincoln—World-Herald RunsSpecial Expedition

YORK, Neb., June 28—The second convention of the Eastern Nebraska Good Roads Association was held in York, delegations being present from Hamilton, Seward, Lancaster, Douglas, Fillmore and Clay county towns. The object of this association is to work out a good highway from Omaha to Lincoln, then on to Seward, York, Aurora and Grand Island. From Omaha to Lincoln the route would be the same as that being followed by the recently organized South Platte-Omaha-Denver Highway Association. At Grand Island it would connect with the North Platte route.

A. B. Christian, of York, was elected president, and F. J. Sharp, of Aurora, secretary. Resolutions were adopted commending the county commissioners and individuals for interest and active financial support in the improvement of the highways in this section recently. Others favored the uniform marking of all main highways between towns and cities, after the plan followed in Iowa. Another favored legislation that will provide for uniform road buildings over the state, under a common plan, and under the supervision of the state engineer, and favored a state appropriation for good roads through a fixed tax levy. A constitution was adopted and work will be pushed to bring about more improvement on this road.

Iowans Exploring Roads

Sioux City, Ia., June 26—Two parties of motorists left Sioux City last Sunday to go out over newly-projected highways, working up interest in them, and in the sociability run, to be held July 6. Five cars, accompanied part of the way by twenty-one other machines from along the route, went from Sioux City over the high-gear route to Spirit Lake, the 120 miles being made in less than a day, in spite of many stops. The party left at 6 o'clock, had breakfast at Remsen, and dinner at Hartley. Everywhere along the way crowds greeted the motorists and many other cars accompanied them part of the way. Five cars from Council Bluffs and the lower end of this Council Bluffs-Sioux City-Spirit Lake route, went all the way through. The party was entertained at the Commercial Club and returned Monday, stopping at Sheldon for dinner, and for a meeting at LeMars in the afternoon to discuss the Sioux City-Twin Cities official highway.

The other party went part way over the Sioux City-Sioux Falls route, going to Lakewood farm, 5 miles south of Rock Rapids. Eighteen cars from the northern part of the route met them there. A picnic lunch was held here, and a meeting at which it was decided to organize a Sioux Falls-Spirit Lake route. Buttons were designed which will be distributed at a meeting to be held in Sioux City, July 3. Twenty-five new members were added to the rolls of the association.

The sociability run of July 6 is to be over the Hawkeye highway and its tributary routes. One hundred and fifty cars are expected to make the trip.

A sociability trip was made over the North Iowa pike from Sioux Falls to Dubuque Monday by motorists from Sioux Falls, who are desirous of placing Sioux Falls on the transcontinental route which is to be mapped out.

The recent trip made by the World-Herald good roads special car over the North Platte route from Omaha to North Platte, has stirred up more interest in the good roads movement than has ever been known along this route before. When the endurance run is held over the route in September, it is expected that practically every foot of the entire 312 miles will have been recently worked. It is at this time that the county having the best stretch of road will be awarded the $500 prize, and the township, the $300 prize.

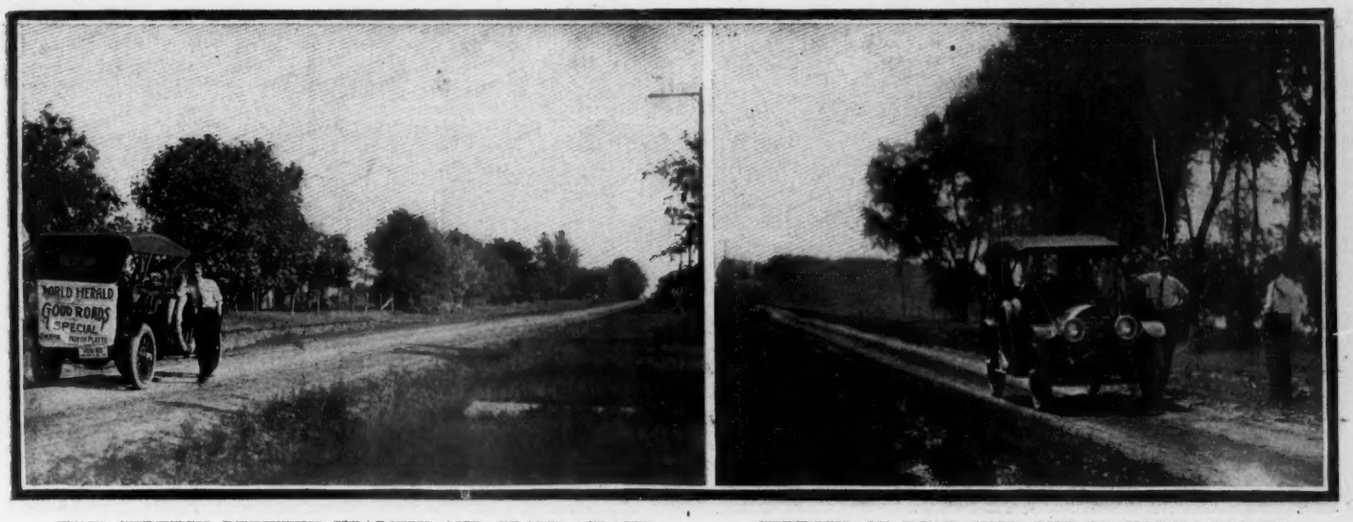
All kinds of roads were encountered on the trip, and Dan V. Stephens, of Fremont, a long-time good roads enthusiast, discussed all the bad stretches with road supervisors and county commissioners. Wherever a crowd could be assembled on the street, Mr. Stephens would make a short good roads talk. Where longer stops were made, regular meetings were held.

In Merrick county more work is being done on good roads just now than in any other. Last year a government expert was called to Central City, and a model mile of road was built. The road is through a sandy soil, so that loam had to be added to it. This is true of most of the 40 miles through this county on the highway. This year the farmers are donating their services, and an effort is being made to put the whole 40 miles in just as good condition as this model mile. Dirt will have to be dumped on nearly all of it. Farmers donating services have done much of it.

One of the greatest improvements needed is in culverts. There are many old high wooden ones, but the new ones being put in this year are practically all concrete and steel. All of the counties are out after the $500 prize offered by the World-Herald.

Meeting at North Platte

North Platte, Neb., June 28—A good roads meeting was held here, the object being to make arrangements to establish a direct route from North Platte to Maxwell, and to build a bridge across the North Platte river on this proposed road. This highway would be shorter than the Union Pacific railway between these points. A committee of R. H. Fowles, William Hendy, and W. M. Plummer, the first two of North Platte, and the last of Maxwell, was appointed to push the work.



FINE STRETCH BETWEEN KEARNEY AND GRAND ISLAND STRETCH OF ROAD JUST OUT OF NORTH PLATTE

Whirlwind Campaign Going on in Iowa

Sioux City in Limelight and the Center of More Roads Than Any Other Town in the State—New Clubs Being Organized in Nebraska—Michigan Reports Grand Highway Progress

SIOUX CITY, Ia., June 24—In a state where the enthusiasm over good roads has been at the boiling point for some time, Sioux City is the center of more roads than any other city in Iowa. It is the hub of all good roads in northwestern part of Iowa.

With the Hawkeye highway across Iowa, the Council Bluffs-Sioux City and Spirit Lake highway, the Sioux City and Sioux Falls official highway, a projected road to Denison, Ia., to connect with the state highway there, a proposed route to Minneapolis, and various other cut-offs, there is something doing on the good roads question all the time.

Delegates from towns along the suggested routes for the Sioux Falls and Sioux City highway met recently at Sioux City to definitely select the route and form a permanent organization. Following a long afternoon of hot argument, the east or interior route won out over the west or river route, although the contest was very close.

The route as selected is as follows: Sioux City, James, Hinton, Merrill, LeMars, Maurice, Sioux Center, Perkins, Doon, Rock Rapids, Lester, Larchwood, Bellclaire, Rowena and Sioux Falls.

The following were elected officers, to succeed the temporary officers elected 2 weeks before: President, C. R. Newby, of Sioux Falls; vice-president, G. O. Jamesson, Sioux City; secretary and treasurer, Neil Mouw, Sioux Center. Executive committee: Woodbury county, C. A. Kneedler; Plymouth county, W. B. Allen, Merrill; Sioux county, Nicholas Balkema, Sioux Center; Lyon county, James B. McMillan, Lakewood Farm; Minnehaha county, Dr. G. C. Cottam, Sioux Falls.

A resolution was adopted urging the authorities to fix up a proper highway within the city limits of Sioux City and Sioux Falls, as the terminals of the road. Work on this is now to be actively pushed.

The Sioux City motorists have made pathfinding trips over the various highways before they have definitely adopted them. The route chosen for the Council Bluffs-Sioux City—Spirit Lake highway is as follows: From Sioux City to LeMars over the Hawkeye highway, from Lemars east to Remsen and Marcus over this highway, then north to Paullina, Primghar, Hartley and Spirit Lake.

Organizing in Nebraska

Omaha, Neb., June 26—Another series of successful organization meetings was held last week by D. E. Watkins, secretary of the Nebraska Automobile Association. A meeting was held at Seward and the county club organized, joining the state association, W. Q. Dickinson of Seward was elected president, and Dr. Wertman of Milford, secretary and treasurer. At a meeting at David City the county club was organized with I. E. Doty, president, and Guy Walling, secretary, both David City men.

The Saunders county club was organized at Wahoo with J. C. Railsback of Ashland, president, John Winter of Wahoo, secretary, and Elmer Johnson of Wahoo, treasurer.

The Saline county motorists met at Wilbur, and J. I. Moore of Wilbur, was elected president, and W. S. Collett of Crete, secretary and treasurer. At least one county supervisor was present at every meeting, and promised aid in the good roads plans of the association to drag one road between adjacent towns.

At the LeMars meeting, officers of the Sioux City-Twin City short line were elected, and the route was established as follows: Hawkeye highway to LeMars, LeMars to Worthing, passing through the following towns: Carnes, Seney, Hospers, Alton, Sheldon, Ritter, Ashton, Sibley and Bigelow.

Michigan Road Construction

Lansing, Mich., June 28—Along with the gradual extension of good roads in the state, it is stated by Highway Commissioner Ely that township commissioners are seeking expert advice from the department. One feature of the spread of good roads throughout the state is said to be the manner in which the poorer counties of the state are leading the way in this improvement, drawing many more thousand dollars from the state in reward for good roads than the richer counties. The upper peninsula is far in the lead over the lower peninsula, although Saginaw, in the lower peninsula, leads all counties in the amount drawn from the state for good roads. Lenawee, Clinton and other southern Michigan counties are content to use the old-fashioned roads. In all, the state has paid out $600,000 for this purpose during the 6 years the department has been maintained. In 1905 there were 20 miles of good roads built; in 1906, 40 miles; in 1907, 80 miles; this figure doubled to 160 in 1908, and increased to 214 in 1909; in 1910 there were 276 miles built and it is estimated the construction this season will run to 350 miles.

UNIQUE QUAKER RUN

Philadelphia, Pa., June 24—Leaving the headquarters of the Automobile Club of Philadelphia, Broad and Locust streets, today at noon, nine cars took part in the annual legal speed limit run of the organization, through Philadelphia and vicinity, all told, about 60 miles. The contest was a continuation of the yearly Brazier cup run, only this year the trophy will be presented by G. W. Fletcher, who captured it last year.

First place was won by Alan Coram, in a Buick, with a 20-point penalty; second, P. N. Elsasser, Winton; third, G. S. McCreary, Buick.

THE CONTESTANTS IN THE WOLVERINE AFFILIATION TOUR REACH HOME

Affilation Tour an Enjoyable One

Wolverine Automobile Club's Swing Around a Circuit a Novelty and Attracts the Owners—Jaunt Not a Contest—Other Cities Join Detroit Party En Route—Canada Invaded

DETROIT, Mich., June 28—The Wolverine Automobile Club's first affiliation tour ended here this afternoon—so far as the Detroit contingent was concerned—when, escorted by a fleet of local cars which had made the trip to Mount Clemens to meet them, the cars that left here 6 days ago on the 800-mile circuit, glided down Gratiot avenue and across Woodward to the Griswold house, whence the party dispersed to their homes.

The Cleveland and Buffalo motorists who were picked up as the tour passed through their home cities, will continue on their way tomorrow morning.

The affiliation tour was a genuine novelty in Michigan motoring. It was an event of a non-competitive nature in which cars, piloted by their owners and carrying full complements of passengers, went over a carefully arranged course in ideal conditions and actuated solely by goodfellowship and a love for the road. The trade influence was almost entirely lacking. Two factories were represented by cars, entered in the names of members of their staff who also were members of the club. Otherwise the private ownership idea was carried to the limit. Not a single retailer was represented on the run, either by a car or as a pilot. No attempt was made for long mileages, the Cleveland-Buffalo run being the only instance in which 200 miles was approached. Late starts and early finishes were the rule.

In point of number of entries the tour was somewhat of a disappointment to its promoters. Private owners without great touring experience naturally shunned the prospect of a trip in which they feared that their mechanical knowledge and roadcraft might show to a disadvantage. There were many withdrawals at the last moment, but a plucky fifteen faced the starter and more than twenty made up the return party, the additions being members of the Cleveland Automobile Club and the Automobile Club of Buffalo, the support of which organizations constituted the affiliation feature of the event.

Thursday, June 22, at 10:30, the start took place. The cars were sent away at intervals of 1 minute, the first car to start being the official car of Chairman H. H. Robinson of the tours and runs committee of the Wolverine club.

The following is a complete roster of the cars, their drivers and passengers: H. H. Robinson's Abbott-Detroit, E. W. McGookin's Packard, A. V. Davis' Maxwell, E. P. Andrew's Buick, William G. Bryant's Hudson, Detroit Board of Commerce's Warren-Detroit, President Porter's Abbott-Detroit press car, George E. Daniels' Oakland 40, Theodore H. Millington's Buick, H. Kramer's Buick, Louis Schmied's Lion, E. Weingold's Herreshoff, Joe Gardham's Everitt, Earl E. McLeish's Regal Plugger.

The course of the run the first day was to Ypsilanti, 38 miles away. The course was pavement for the first seven miles and excellent highway for the rest. A large part of it has been macadamized recently, through the efforts of the Wayne county road commission. At Saline the tourists stopped for lunch.

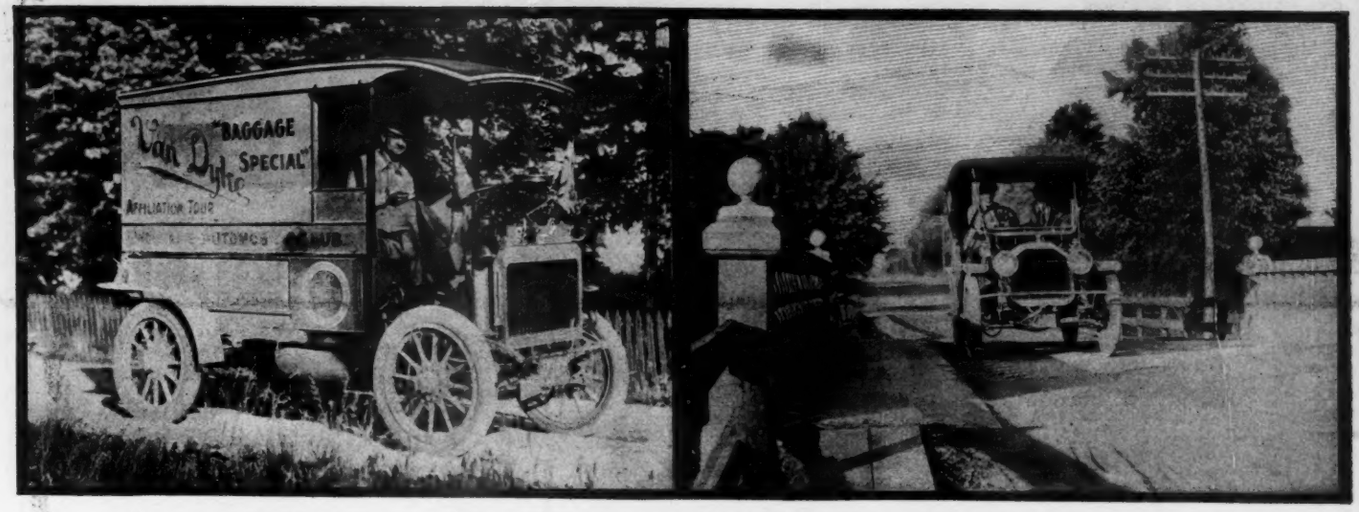
The first car in at Toledo was the Packard of E. W. McGookin. This was closely followed by William G. Bryant's Hudson. The Van Dyke truck had preceded the party and had distributed its baggage.

The run of Friday was from Toledo to Cleveland. Again the weather was ideal for the trip and the run was made according to schedule to Sandusky, the noon control, where a fish dinner had been arranged for, served with wine from the neighboring cellars.

Another stop was made at Elyria where the tourists paused for a drawing at the Dean Electrical Co.'s factory.

Saturday's run was the longest of the tour and a 5 o'clock call summoned the motorists to breakfast and the road. Their cars had been left at various assigned garages but all were within easy reaching distance and the entire party was on the road by 6 a. m. The day was extremely hot and many had tire troubles that were lacking on the first two days. The noon control had been located at Erie and the roads were excellent, so all but a few of the party made the Reed house on time.

CARL PAGE AND SALESMEN VISIT CHALMERS FACTORY



DETROIT TOUR—VAN DYKE TRUCK AT NIAGARA FALLS—BUICK ENTERING LONDON, ONT.

The tourists were all anxious to reach Buffalo in time for dinner and started beating it early.

Sunday had been scheduled as a day of rest, and this plan was furthered by the Automobile Club of Buffalo, which arranged a special luncheon for the Detroiters at the new home of the club, at Clarence, N. Y.

It was still raining when the time came to check out from Niagara Falls Monday morning, but the Canadian roads were excellent, being either macadam or gravel practically all the way from Niagara Falls to Toronto. The noon control was at Hamilton, where the rain was left. The remainder of the trip was through beautiful, hilly country, on which the brakes were often called into play and the first low-speed work of the entire run was required. Canadian motorists joined in extending hospitality.

On Tuesday the tour swung out of Toronto homeward bound. A different route was employed between Toronto and Hamilton and one apparently even more beautiful than that by which the tourists had entered. The Canadian highways were in fine condition after the rain and the utter freedom from dust added to the attractions of the day. At Hamilton the enthusiastic citizens in evidence Monday were again on hand and the tourists spent a pleasant lunch hour.

Owners of Mound City in a Mud Plug

Annual Contest in St. Louis Returns As Winners C. M. Barnard With Mitchell in Touring Car Class and F. H. Pingree in Cadillac in Roadster Division—Twenty-Four Start

ST. LOUIS, Mo., June 26—C. M. Barnard, making a score of 996 with a Mitchell, was declared winner of the Fred H. Semple trophy for touring cars in the fourth annual owners' reliability run of the Automobile Club of St. Louis, held in a pouring rain over 138½ miles of muddy country roads Saturday. F. H. Pingree and C. R. Garrison tied for the Samuel H. Pingree trophy for roadsters, each driving a Cadillac and each making a score of 995. Sixteen cars started in the touring car class, eleven being disqualified.

The tour was open only to owners. Any car was considered a touring car which was provided with a tonneau and seats for five. For the purposes of the tour, all other cars were classed as roadsters. The touring cars were compelled to carry four persons, including the observer, and the runabouts two. Motors were required to be kept running continuously, except at the third checking station, where a stop of 40 minutes was made for luncheon. There also the oil and gasoline tanks could be replenished. Brake tests, clutch tests, transmission tests and motor tests were made at the finish. Summary:

TOURING CARS, CLASS A

Entrant and car	Score
C. M. Barnard, Mitchell	996
S. C. McCormack, Cadillac	990
Millard P. Kaiser, Packard	986
V. W. Bergenthal, Cadillac	984
James Bell Berg, Stoddard-Dayton	972
O. M. Kupferle, Morman	957
Raymond H. Kilgen, Marmon	933
J. W. Rainey, Pullman	924
Ed. Schopp, Morman	860
C. A. Morton, Firestone-Columbus	859
H. D. Condie, E-M-F	819
O. W. Hickel, Oldsmobile	*
Christine Graham, Packard	*
Geo. K. Fisher, Mitchell	*
Earl Giraldin, Inter-State	*
Fred Riesmeyer, Amplex	*

ROADSTERS, CLASS B

F. H. Pingree, Cadillac	995
C. R. Garrison, Cadillac	995
Mrs. Margaret A. Reber, Hudson	965
Dr. S. A. Van Hoefen, Mitchell	959
Geo. F. Tittmann, Stoddard-Dayton	941
Ed. R. Limbery, Locomobile	*
Ralph L. Smith, Locomobile	*
Tom Moss, Maxwell	*

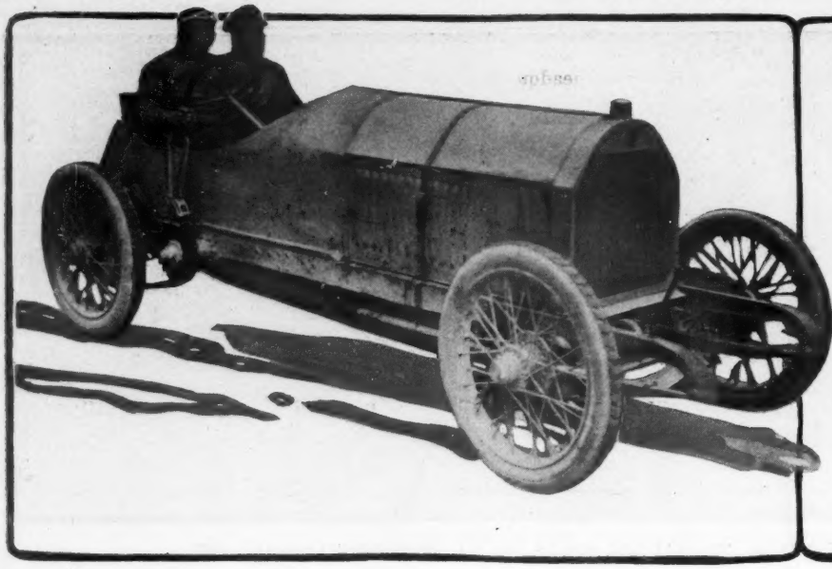
*Disqualified

PREMIER OWNERS START ON TRANSCONTINENTAL JOURNEY

BIG PREMIER TOUR

Philadelphia, Pa., June 26—A dozen Premier cars taking part in an ocean-to-ocean trip made their initial stop today in Philadelphia after an uneventful run from Atlantic City, the starting point, arriving at the Hotel Walton shortly after noon, where they were welcomed by members of the Quaker City Motor Club and the Automobile Club of Philadelphia.

Many Philadelphians are participants in the transcontinental trip, the idea of which originated among several Premier car owners in this city about 3 weeks ago. It is proposed to make a run by easy stages from the beach at Atlantic City, N. J., to Los Angeles, Cal., in 46 days, but as several days will be spent in the various cities through which the tourists will pass, the actual running time will only be about a month.



Austria's National Hill-Climb

HEIM IN BENZ, HERO OF AUSTRIA'S CLIMB

VIENNA, June 9—Since the Austrian authorities are standing by their decision of 2 years ago, namely, not to give a permit for the holding of another motor car climbing contest on the Semmering hill, the motorists of Emperor Joseph's land have been holding their annual hill-climb on the Ries mountain, located near Graz.

Although beautifully situated in a most picturesque part of Austria and although the course is a fine one for any kind of car or motor cycle test, it may be some years before the Ries event will attain the same popularity as the famous Semmering, the principal reason being that it is much farther away from Vienna. Nevertheless, the fact that two archdukes and two princes of the imperial house of Austria were present a few days ago at the fourth annual climb seems to indicate that in time the aristocracy which used to flock to the Semmering also will go to the Ries.

There was a large and representative entry list this year. Bad weather during the early morning hours and during part of the day upset the expectations of the promoters and of the large crowd which lined the 6-kilometer—3.7 miles—course. Notwithstanding the rather poor condition of the route up the hill, all former records were smashed and some even exceptional fast climbing was accomplished.

All told, there were twenty starters. The cars divided into classes according to weight and cylinder capacity. The time winner was Heim, driving the four-cylinder 7.3 by 7.9 Benz racer. His time was 4 minutes 16⅕ seconds.

The starters in class 1 were touring cars weighing not over 1,320 pounds and having a cylinder capacity of not over .396 gallons of fuel. The winner was Ferd Lanner in a two-cylinder Puch, which has a 3.3-inch bore and 5-inch stroke. This time was 6:53⅘.

In class 2, for cars weighing not less than 1,580 pounds and of a total cylinder capacity of not more than .792 gallons, the winner was Louis Obruba in a four-cylinder Mathis, 3.1 by 5.5. Time, 5:23⅗. The former record was 6:16⅕.

Class 3 was for cars of a minimum weight of 1,980 pounds and a total cylinder capacity of not more than 1.05 gallons. The old record of 5:30⅗ was broken by the winner, Otto Wolf, driving a four-cylinder Puch, 3.3 by 6.6, in 4:58⅖.

In the next class contest, for cars of not more than 1.58 gallons cylinder capacity and of a minimum weight of 2.420 pounds, the old record of 6:02⅗ was given a severe bump by Eduard Nikodem. Driving a four-cylinder Austrian Daimler, 4.1 inches bore by 6.5 inches stroke, Nikodem went up the Riesberg in 4:40⅘.

Otto Wolf, for the second time during the day, drove a Puch to victory in event No. 5. This was for cars weighing at least 2,204 pounds and having a maximum cylinder capacity of 1.32 gallons. His car has a four-cylinder motor 3.3 by 6.6. The time was 4:54⅖.

There was only one starter in the class reserved for cars of a minimum weight of 2,640 pounds and a maximum cylinder capacity of 2.11 gallons. Herman Lapp made the ascent in 4:40⅗ in his four-cylinder Austrian Daimler, 5.5 by 5.1. The former record was broken by 2⅕ seconds.

In the free-for-all event only one contestant started, Heim in the fast Benz, which went up the 3.7 miles in 4:16⅕.

A few days after the Ries event another hill-climbing contest was held near Trieste, on the Opcina hill, over a course of 4.58 miles with an average gradient of 10 per cent. Ten thousand spectators watched. Probably the most interesting fact of the meeting was that there were only thirteen classes of cars for a grand total of twenty-three starters, the record of starters in one class being three. Among the contesting cars were two Fords, two Mercedes, a Benz, Laurin-Klement six, two S. P. A.'s, one Lancia, four Puchs and two Austrian Daimlers. The two American runabouts took second and third places. The fastest time for the 4.58 miles course was made by Otto Hieronimus, with a four-cylinder Laurin-Klement racing car, built in 1909. Otto's time was 6 minutes 7⅗ seconds.

SPANISH TITLES DECIDED

Barcelone, June 9—The amateur motor championships of Spain were decided a few days ago and resulted in Jose Ciudad winning the long distance race and Bourrier capturing the short distance event. Both drivers drove Hispano-Suizas. In the 120-kilometer—74.6 miles—race there were nine starters, among them being a Ford, a Vivinius and a Hispane-Suiza, all three dropping out during the progress of the race. The winner was Jose Ciudad in a four-cylinder Hispano-Suiza, who covered the course in 1 hour 38 minutes 25 seconds. Another car of similar construction was second, a Minerva was third and another Hispano-Suiza fourth. The short-distance championship was run over a course of 2 kilometers—1.2 miles—from a flying start. There were fourteen starters. The fastest time was that of Bourrier driving a six-cylinder Hispano-Suiza, in the fast time of 1 minute ⅖ second. Carrevas in a four-cylinder Hispano-Suiza made the second fastest, 1 minute 4 seconds.

PARIS TAXICAB STRIKE

Paris, June 17—It is not often that strikers have the sympathy of the public, and it is still less frequently that the actions of Paris taxicab drivers meet with approval. But in the struggle between the Paris drivers and the city authorities it is the former who have the approval and sympathy of the public and the press. The taxicab drivers use benzol as fuel in place of gasoline because of its slightly lower initial cost and the fact that it pays a lower town duty. But the municipality was in need of money and without any warning increased the city tax on benzol

to rates which were equivalent to a dead loss of 20 cents a day to each driver. The men declared a 24-hour strike, the only result of which was to cause the municipality to promise to study the matter. Resolved that they would not pay the additional tax, a second strike was declared, to last 48 hours, and the day chosen was the eve of a public holiday, when taxicabs are in great demand for railroad depot work. Up to the present this has not brought about the desired result, and the men are now meditating further acts of aggression, among them being the simultaneous abandoning of the 6,600 taxicabs of Paris on the main boulevards at the busiest hours of the afternoon, or a combined attempt to force a way through the various city gates without paying the tax.

Paris possesses 6,608 licensed taxicabs, of which 1,837 are owned by the drivers. With hardly an exception they make use of benzol as fuel, for its cost outside the city limits is only 6 cents a liter, compared with 8 cents for gasoline. But before it can pass through the city gates all gasoline must pay a tax equal to 18 cents a gallon, whereas the tax on benzol was only 9 cents a gallon. As the drivers are under a contract to provide their own fuel, it is not surprising that they preferred benzol. But the authorities decided to increase the city tax on benzol to 17 cents a gallon, making it as costly as gasoline. The council of state, considering that the tax was out of all proportion to the material taxed, refused to sanction the new regulation, and a reduction was made to 13 cents a gallon. But this did not by any means satisfy the drivers, for the increase was still sufficiently high to cause them a dead loss of practically $60 a year. And there was no opportunity of passing the tax on to a third party, for on the one hand the men are bound by contract to provide their own fuel, and on the other their operating rates are fixed by the city authorities.

RACING AT GRAND RAPIDS

Grand Rapids, Mich., June 28—Special telegram—Burman and the Moross string drove here today in the local track meet. Summaries:

Three-mile Handicap—McNay, Cutting, 10 seconds, won; McCullen, Ford, 15 seconds, second; Grannon, National, scratch, third. Time, 3:25.

One-mile Exhibition—Burman, Benz, :52.

Australian Pursuit Race—McNay, Cutting, won; Grannon, National, second.

Match Race, 3 Miles—Burman, Benz, defeated Knipper, Mercedes. Time, 3:05½.

Ten-mile Exhibition — Burman, Benz, 9:20⅗.

AFTER FOREIGN BUSINESS

Detroit, June 27—The General Motors Co. has mapped out a systematic campaign in the foreign field and has formed a special corporation to take charge of this portion of the business. The new corporation will be known as the General Motors Export Co., articles of incorporation of which have been filed at Lansing. President Thomas Neal; First Vice-President Gleeson Murphy and Second Vice-President O. G. Bennett are the officers of the corporation, which will have its headquarters in New York. Mr. Bennett will also be general manager.

The new firm will seek business in the foreign field through local dealers, but will introduce a service feature which will place at the disposal of the purchasers of the firm's cars all the advantages of close relations with the producing factories.

SAURER HEADED EAST

Chicago, June 28—After having run from Denver to San Francisco last spring, the Saurer 3-ton truck now is completing its transcontinental journey. It was shipped from the coast to Pueblo and left there over the road on June 12, headed for New York city. It ran from Pueblo to Kansas City, 700 miles, in 62 hours, actual running time. It is expected to reach Chicago tomorrow, having been at Dixon today.

CHICAGO BILLS SOMETHING NEW

Chicago, June 28—The Chicago Motor Club has arranged a unique outing for July 20-21, when it is proposed to run off a reliability match between two teams from the club, one made up of tradesmen and the other amateurs. The run will be to St. Joseph, Mich., stopping at the Edgewater Club. On the afternoon of July 20 a field day will be held in which those contesting in the team match will show their athletic prowess. The reliability will be resumed at noon the next day, finishing in Chicago the night of the 21st.

NEW YORKERS HOLD STATE MEETING

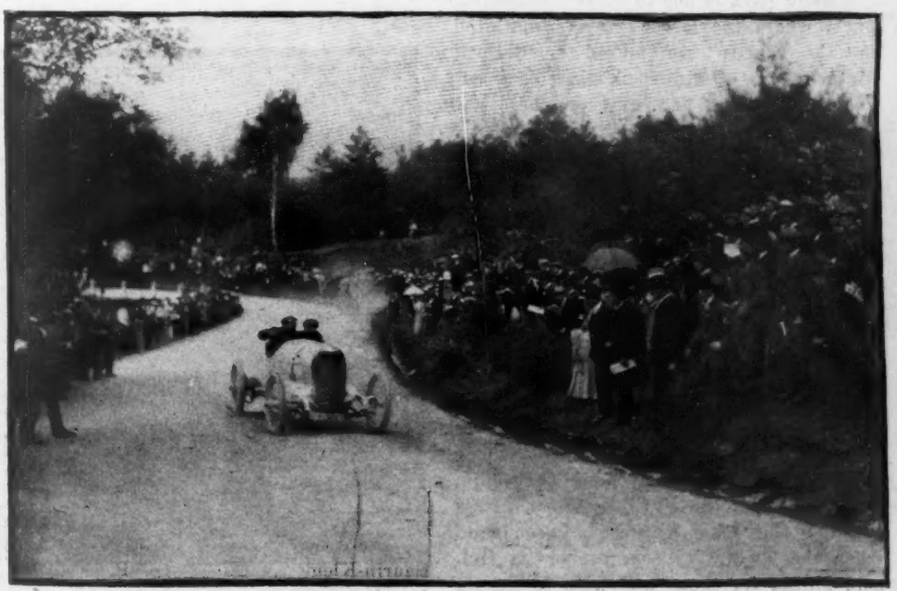
Albany, N. Y., June 25—The first annual dinner of the New York State Automobile Association was held here last night and was attended not only by members of the state organization but by many prominent A. A. A. officials, including President Hooper, Chairman Butler of the contest board, Chairman Longstreth of the touring board and Chairman Diehl of the good roads board and Chairman Batchelder of the executive committee.

An executive meeting of the association was held yesterday afternoon at the Ten Eyck. The association endorsed the Saxe bill aprpopriating another $500,000 for road improvements. J. A. Ritchie, recently elected secretary of the association, read his report, which showed the association to be in good condition. The secretary's report showed that the association has been very active in securing road improvements, and it is expected that during the next year many more improvements will be made. H. W. Smith, of Syracuse, resigned as treasurer of the state association and it was decided to combine the offices of secretary and treasurer until the next meeting of the organization, January 1.

The report of the law and legislation committee was submitted by H. G. Andrews. The new constitution and by-laws drawn up by a special committee appointed at the last meeting were approved.

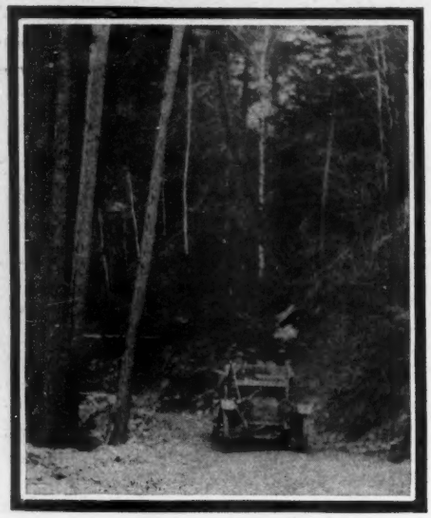
FAST TIME IN ENGLISH CLIMB

Birmingham, Eng., June 10—Today's hill-climb on Shelsley Walsh hill, conducted by the Midland Automobile Club, was one of the most successful of the year. The hill is ⅔ mile long and has two turns that bring out the drivers' skill and invariably produce some thrills for the spectators. The gradient is 16 per cent in one or two places. The old record for the hill was broken by H. C. Holden in a 58-horsepower Daimler-Knight car, the time being 1:3⅖, or 3⅕ seconds under the old mark set by S. E. Edge in a Napier in 1908. In the formula division the winner was P. C. Kidner in a 15.9-horsepower Vauxhall in 1:12, with a four-seated body with passengers. The engine used is 80 by 200 millimeters, or 3.14 inches bore, by 7-87 inches stroke. It weighed 3,059 pounds.



RIES MOUNTAIN USED FOR AUSTRIA'S NATIONAL CLIMB

Routes and Touring



IN THE TIMBER WHERE THE ROAD WAS GOOD

The First Motor Trip to the Glacier Park

KALISPELL, Mont. — Editor Motor Age—Perhaps the readers of Motor Age little realize what the future may have in store for them in the west in the way of touring through the beautiful valleys and mountain scenery, all to be had soon over good roads.

The government has set aside a vast area of beautiful country in the northwestern part of Montana equal to, if not in some ways surpassing, the already well known Yellowstone park. This is known as Glacier park and is adjacent to the Great Northern railway. Belton, a little town right in the mountains, lies just 3 miles from Lake McDonald, one of the prettiest lakes in the world and right in the heart of the park.

Glacier park is not to be as Yellowstone park, where the motor car is prohibited, but the officials have assured the Flathead Motor Club, of Kalispell, that cars will not be excluded, and, further, there will soon be a good motor road from Kalispell right to Lake McDonald. The government now is commencing to spend large sums of money in making improvements, and in time fine macadamized roads will lead through this wonderful playground.

The Kalispell Road

The motor road from Kalispell, which will bring Glacier park in touch with the outside world, has been brought about by the efforts of the Flathead Motor Club. Money has been donated and the county commissioners of Flathead county have promised the balance to complete the highway by the middle of this summer. It is possible the road may be in condition when the Twin City tour arrives at Helena, Mont., for those who wish to extend the trip this far. This road will be one of the finest drives in the world, as it traverses a wild country full of mountain scenery. Part of the road which is completed had to be blasted out of cliffs, where the car can be stopped and the occupants look over the edge into deep, clear, running rivers and where trout may be seen jumping, eager for the lure cast by rod and reel, and even the novice can meet with success.

A deer now and then may scamper across the road or stand watching and wondering near some protecting cover, where it may soon be lost from sight and out of range. Mountain streams, clear and pure as water ever flows, are crossed repeatedly, and inviting spots are offered for lunch or loafing. There is not a foot of the 35 miles of road from Kalispell to the park which has not a charm for the tourist.

I had the pleasure of driving the first motor car into the Glacier park in May, of this year, going over an old tote road, where everyone had said it was impossible to get a car through on account of the stumps, rocks and heavy grades. Taking my E-M-F 30, with two other motor enthusiasts, and an equipment of axes, picks, shovels, ropes, block and tackle, and provisions, in case we were stranded in some mudhole over night, we left Kalispell at 7 o'clock in the morning.

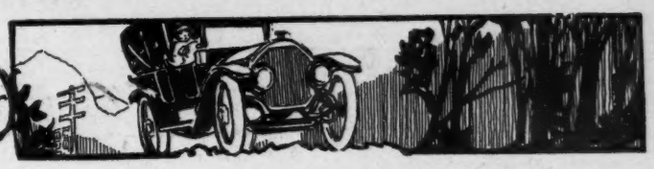
The run for the first 25 miles was made in 1 hour 30 minutes, as this part of the road was not bad, but this point marked the end of where rubber ever had rolled. Looking up the road from here it had a rather warty appearance and the tenderfoot would have backed out, but we bored in with the determination to go through if we had to take the car down and carry the pieces. Every 100 feet offered something new and different. Part of the road had been corduroyed at one time, but was now rotted out in places and filled with mud, which seemed to have no bottom. The snow still remained in spots and dense forest flanked us on either side, as the road had just been cut out wide enough for the sleds. Stumps were left in the road from 1 foot to 18 inches in height.

Effort in Touring

We would look down a steep grade of maybe 40 per cent, covered with stumps and ice, lock the wheels and slide to the bottom, wondering if we could ever get back up on the return trip. Then the other side of the canyon would confront us. The muffler caught on a stump, tearing the exhaust pipe loose, and we did not take time to repair the damage but let the car bark as loud as it liked. There was no back pressure, and I think it was part of our salvation, for we needed power. The car seemed endowed with the same spirit we were—to get through by all means. The Old Scout, as we christened it, never required any assistance outside of clearing the path, and the block and tackle lay peacefully in the place where we had put them when we reached our destination at 4:30 o'clock in the afternoon. The people of Belton certainly were surprised to see us emerge from the woods and welcomed us with delight, for it meant a good road later, and this little town soon will be the scene of much activity.

TOURISTS BECOME LUMBERMEN TO CLEAR THE WAY OF FALLEN TREES

Information



To say we were tired was putting it mildly. While we were fresh at the start, we cleared the way as much as possible and tried to save the car, but the closer we got to Belton the more was left for the Old Scout, and if it would go the boys rode the running boards. After something to brighten the inner man we made the trip to Lake McDonald. This road was not bad except for deep mud. The government has a large crew of men working and it soon will be a boulevard.

In order to hasten the trip home next day, we engaged the assistance of two experienced wood-choppers with sharp axes, and the E-M-F was taken down over the ties of the Great Northern for 5 miles, where our tote road crossed the track, and we took to the woods again. We arrived home a little after 2 o'clock. We had only one puncture on the trip.

To reach this country by motor, cross the Rocky mountains by way of Butte, then to Missoula and north to Kalispell, and then to Glacier park. A month or longer may be spent at Kalispell touring in different directions over good roads, where beautiful mountain scenery, lakes and rivers abound. The finest hunting and fishing are at your command.—Frank D. Stoop, Secretary Flathead Motor Club.

THE TIRED HOUSEWIFE'S RIDE

Chicago—Editor Motor Age—For the benefit of tired housewives, I want to tell of a little trip I took one Saturday. I had been housecleaning all the week and was all tired out, and I said I would have to get out in the country where I could not see a house, or else go to the lake and jump in. As we live in Woodlawn, the lake is quite convenient. My son, who is in high school, said that to save my life he would give up a very important ball game and take me by the shortest route to the country. So we took the nearest good road, which was Sixty-seventh street, through Englewood to Halsted street, south on Halsted to Seventy-fifth street. As we passed the Seventy-ninth street cars every one was full and overflowing, and I knew lots of the passengers were poor victims of the housecleaning habit running to the woods. We turned west on Seventy-fifth street past the Longwood station where the trains unloaded crowds of wild-flower seekers, and soon reached the real country where there was nothing but grass, trees and sky.

New Cure for Victims of Summer Housecleaning

It was an ideal day, the sky was a beautiful blue without a cloud, and fields, where they were level, looked like newly mown lawns. Nearly all the farmers were plowing and the smell of the freshly plowed earth and the perfume of the blossoms from the fruit trees was a tonic to tired nerves that nothing in the city could equal. The road all along this way is of good hard dirt and there was not a speck of dust unless it was behind us. But, unlike Lot's wife, we did not look back to see as we were too anxious to see what was beyond the steep hills ahead. A few miles west of Longwood the country is rolling and the hills follow each other like the roller coaster at the White City, up one and down another.

Out in this locality the houses were a long distance apart, and hidden by orchards of fruit trees all in bloom, one mass of pink and white blossoms. Most of the front yards were full of lilac bushes in bloom, which made us covet our neighbors' flowers. We crossed several small bridges over little brooks where the water was as clear as if fed by springs, with none of the scum which I suppose will be on it later in the season. At one place the children were bare-footed, sailing their boats and wading; a little farther on, as if to satisfy all our longings, we found some fruit trees growing beside the road and in the ditches that seemed to belong to no one, so we got out and helped ourselves to the blossoms and took them home to remind us of our delightful trip.

PART OF THE WAY FROM GLACIER PARK WAS COVERED ON THE TIES

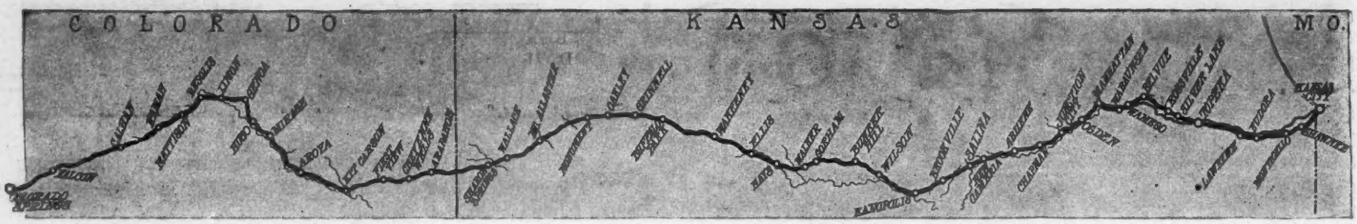
I do not know how many miles west we went, but at last we had to think of returning home, so we came to a good road running south and took it and again at One Hundred and Tenth street turned east past the race track and the town of Worth and still on the same road through Morgan Park and Tracey to Ninety-fifth street and home. We were only gone about 3½ hours and we brought home bigger appetites than we had for months, nerve tonic to last till housecleaning was done, and a coat of sunburn that probably will last longer, as we took off hats and veils to get the full benefit of the beautiful day. We did not care if we did look like Indians—we would take the same trip again the first chance we got and advise every cranky housecleaner to do the same.—Annie M. Borroff.

UP ABOVE THE SNOW LINE. THE SNOW WAS 2 FEET DEEP IN PLACES

INDIANAPOLIS TO WASHINGTON, D. C.

Carthage, Ind.—Editor Motor Age—Through the Routes and Touring Information Department will Motor Age give me a route from Indianapolis, Ind., to Washington, via Winchester, Va., with distances? Is an Indiana license sufficient for traveling in the various states traversed?—Howard E. Henley.

Traveling on the old national pike pass through Cumberland, Greenfield, Ogden, Louisville, Dublin, Cambridge City, Centerville, Richmond, Eaton, New Lebanon,



TOURING ROUTE TO COLORADO SPRINGS FROM KANSAS CITY

Dayton, Harshman, Fairfield, Enon, Springfield. So far you will find a level country and practically gravel pike all the way. You can now follow the 3-day trip from Dayton, O., to Washington, D. C., mapped out in Motor Age, issue of March 30, as far as Hagerstown, Md. The New York-Atlanta highway is traversed now to Winchester through Tilghmantown, Battlefield of Antietam, Sharpsburg, Shepherdstown, Halltown, Charlestown, Clifford and Berryville. A more direct route from Hagerstown lies through Williamsport, Martinsville, Clarksville, Bunker Hill, Ridgeway, Clear Brook and Winchester. The latter is a distance of 41.8 miles, and the former 58 miles. Retracing your path back to Berryville, Charlestown and Halltown you might go on to Harpers Ferry, Sandy Hook, Knoxville, Jefferson, Frederick, Hyattstown, Clarksburg, Gaithersburg, Rockville, and Washington, D. C.

From Winchester to Washington, D. C., by way of Harpers Ferry you will find mostly toll road not at all good in wet weather and only fair in settled weather. You will encounter several short, steep hills, stretches of good pike and considerable poor dirt road. If you should desire to go back to Hagerstown from Winchester and then on to Frederick and Washington, D. C., this itinerary can be found in the Motor Age issue of March 30 as well.

The mileage is as follows: Indianapolis to Springfield, 132.9 miles; Springfield to Hagerstown, Md., approximately 347.3 miles; Hagerstown, Md., to Winchester, Va., 52.6 miles; Hagerstown to Frederick, Md., and Washington, D. C., 69.3 miles.

In Ohio and West Virginia non-residents are exempt; in Pennsylvania you need only display your home state tags; you are exempt for two periods of seven consecutive days in Virginia, but must show your home state tags; and in Maryland non-residents can secure two 7-day permit tags a year without charge by applying to the commissioner of motor vehicles.

CAPE GIRARDEAU TO COLORADO

Doniphan, Mo.—Editor Motor Age—Please give me the best route from Cape Girardeau, Mo., to Colorado Springs, Colo., passing through St. Louis, Mo., Kansas City, and Colby, Kans.—A New Subscriber.

Motoring from Cape Girardeau to St. Louis takes you over a portion of the proposed St. Louis-Hot Springs highway, through Jackson, Parryville, St. Marys, Ste. Genevieve, Zell, New Offenburg, Weingarten, Valley Forge, Farmington, Flat River, Desloge, Bonne Terre, Lemaster, De Soto, Hillsboro and St. Louis. The stretch from Bonne Terre to De Soto is almost impassible in wet weather, and some advise that it is best to ship your car either by rail or boat to St. Louis. The trip from St. Louis to Kansas City is an Automobile Blue Book Route, which can be found in this issue incorporated in the answer to the inquiry from G. Wilson, of Denver, Colo., on page 23.

The route over which the Kansas City tourists traveled in 1910 on their return from Colorado Springs takes you through Shawnee, Zarah, Monticello, Cedar Junction, De Soto, Endora, Lawrence, Perry, Newman, Topeka, Wamego, Manhattan, Ogden, Junction City, Chapman, Abilene, Salina, New Cambria, Kanapolis, Ellsworth, Wilson, Dorrance, Bunker Hill, Russell, Gorham, Walker, Victoria, Hays, Ellis, Ogallah, Wakeeney, Collyer, Quinter, Buffalo Park, Grainfield, Grinnel and Oakley, where you follow the railroad to Colby. To continue to Colorado Springs, come back to Oakley and thence on to Monument, Page City, Winona, McAllaster, Wallace, Sharon Springs, Weskan, Arapahoe, Cheyenne Wells, First View, Kit Carson, Sorrento, Wild Horse, Ayra, Boyero, Mirage, Hugo, Limon, River Bend, Reoslis, Mattison, Ramah, Calhan, Tip Top, Peyton, Falcon, and Colorado Springs.

CUMBERLAND TO PHILADELPHIA

New Carlisle, O.—Editor Motor Age—Kindly give me the best route from Cumberland, Md., to Philadelphia, Pa., also the legal requirements for crossing Maryland.—F. P. Stafford.

Starting from Cumberland, tour to Flintstone, Hancock, Hagerstown, Leitersburg, Waynesboro, Rouzerville, Fountaindale, Fairfield, Gettysburg, Littlestown, Hanover, Abottstown, Thomasville, York, Hellam, Columbia, Mountville, Lancaster, Paradise, Strasburg, Sadsburyville, Coatesville, Downington, Paoli, Berwyn, Wayne, Bryn Mawr, Ardmore, Fairmount Park, and Philadelphia. From Hagerstown to Gettysburg is over stone road practically the entire distance, and from Gettysburg to Philadelphia you will have to travel over a toll road. The approximate distance is 232 miles.

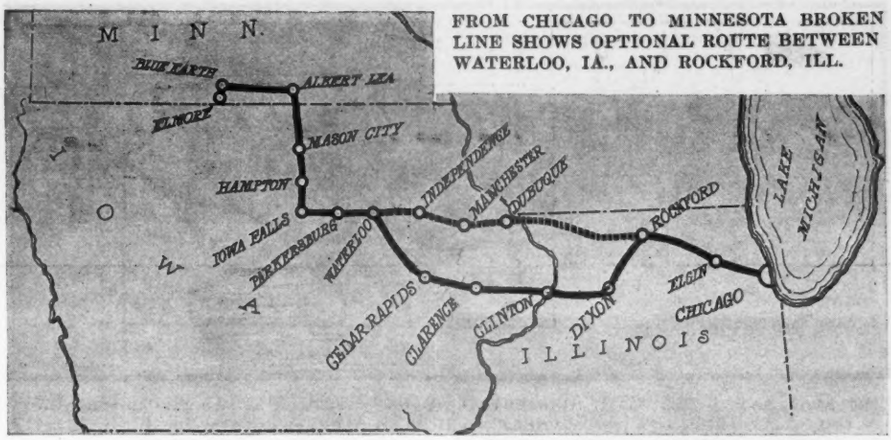
You will find in the Routes and Touring Information department of Motor Age, issue of March 30, some additional information which might be of interest to you if you wish to take a longer trip. This takes you to Washington, D. C., Baltimore, York, and Lancaster to Philadelphia. From Cumberland you can motor to Centerville and Bedford Springs and follow out the 1908 Glidden tour route to Philadelphia through Harrisburg, Lancaster and Reading, which also is outlined in that issue. Should you desire to take in Washington, D. C., but travel over the most direct thoroughfare to Baltimore

Equipment Needed For Mountain Touring

DENVER, COLO.—Editor Motor Age—There are some things that really should be provided when preparing for a tour in rough or mountainous country which are not so necessary in case the trip is to be over fairly level country and good roads. One accustomed only to the latter kind of travel is liable to find himself without adequate facilities for progress in rougher country.

When broken country with bad roads are likely to be encountered it is well to have a length of stout rope, preferably with an iron hook bound in one end. By attaching one end of the rope to a convenient tree and using one rear hub as a windlass, the car can be made to pull itself out of a ditch or hole that would otherwise require the services of a team of horses. An extra clip or two in the supply box will save hours of time, and perhaps the entire spring, in case one of the leaves breaks. A collapsible canvas pail for getting water for the radiator is a prime requisite in country where rough roads often cause leaks in the cooling system. Nothing is more annoying than to have to go several miles to a farmhouse for a pail when the car is left standing beside a stream of water.

A piece of 2- by 4-inch scantling about 3 feet long will be found very handy if a wheel has to be jacked up on ground so soft that the jack sinks into it. Another part of the equipment that is not necessary on level roads but which surely will be useful in mountaineering is a complete soldering outfit. Loose electrical connections, a leaky radiator, or fuel or oil line will certainly occur under the continuous jars and bumps of rough travel. Chains and mud hooks will of course be needed and a length of canvas a little wider than the car will serve as a temporary road surface to give traction for the rear wheels if the car stalls in sandy spots.—Motor Mountaineer.



FROM CHICAGO TO MINNESOTA BROKEN LINE SHOWS OPTIONAL ROUTE BETWEEN WATERLOO, IA., AND ROCKFORD, ILL.

and Philadelphia you will find this outlined in the issue of last week's Motor Age in answer to an inquiry from W. T. Gill of Washington, D. C. This information, as well as numerous detours through the interesting part of that country is contained in the Automobile Blue Book with running directions mile after mile.

As for the legal status of affairs, you will have no trouble in motoring through Maryland, Pennsylvania or Delaware, providing you have complied with your home state laws.

DENVER TO CHICAGO

Denver, Colo.—Editor Motor Age—Will Motor Age kindly publish in the Routes and Touring department the best route from Denver to Chicago via Kansas City, St. Louis and Dunlap, Ill., and the mileage of same?—G. Wilson.

Denver to Colorado Springs will take you through Littleton, Sedalia, Perry Park, Palmer Lake, Pring and Pike's View, a distance of 67.6 miles. Traversing the Santa Fe trail over roads which are well signboarded and kept in first-class condition, you will pass through Cannon City, Pueblo, Fowler, La Junta, Las Animas, Lamar, Holly, Syracuse, Garden City, Dodge City, Kinsley, Larned, Great Bend, Lyons, Sterling, Nickerson, Hutchinson, Halstead, Burrton, Newton, Peabody, Florence, Strong City, Cottonwood Falls, Plymouth, Emporia, Waverly, Agricola, Williamsburg, Ottawa, Wellsville, Gardner, Olathe, Martin City and Kansas City. The Kansas City Star run went over this trail in 1910.

The traveled road between Kansas City and St. Louis takes you through Independence, Blue Springs, Odessa, Higginsville, Corder, Blackburn, Shackleford, Marbee, Clark, Mexico, Martinsburg, Wellsville, New Florence, Jonesburg, Warrenton, Wright City, Wentzville and St. Charles. From Kansas City to St. Louis is 310½ miles, and you will experience no difficulty in making this stretch in dry weather.

St. Louis to Peoria brings you a distance of 178 miles nearer through Collinsville, Marysville, Edwardsville, Wordem, Staunton, Mt. Olive, Litchfield, Springfield, Middletown, Delavan, Dillon and Peoria. You will find unimproved prairie road, which is almost impassable in wet weather, practically the entire leg. From Peoria the route takes you to Mossville and then on to Dunlap. Here you either will return to Mossville or go to Rome, whichever you find to be the better road, thence on to Chicago through Chillicothe, Henry, Putnam, Bureau, Hollowayville, Seatonville, Peru, La Salle, Ottawa, Danway, Norway, Newark, Yorkville, Montgomery, Aurora, Naperville, Downers Grove, Hinsdale, Fullersburg and Chicago. This Peoria-Chicago stretch totals 180 miles.

In Motor Age, issue of April 20, you will find a route covering the Santa Fe trail from Colorado Springs, Colo., to Kansas City, Mo., the map of which is reproduced on page 24 of this issue; and Kansas City to St. Louis is mapped out on page 25 of this issue.

FROM CHICAGO TO MINNESOTA

Chicago—Editor Motor Age—Will Motor Age kindly publish the best route from Chicago to Elmore, Minn.—E. J. Weller.

The route for you to take is through Lombard, West Chicago, Geneva, De Kalb, Creston, Rochelle, Ashton, Franklin Grove, Dixon, Sterling, Morrison, Fulton, Lyons, Clinton, Dewitt, Grand Mound, Wheatland, Lowden, Clarence, Mechanicsville, Mt. Vernon, Cedar Rapids, Palo, Shellsburg, Vinton, Mt. Auburn, La Porte, Washburn, Waterloo, Cedar Falls, New Hartford, Parkersburg, Austinville, Iowa Falls, Hampton, Rockwell, Mason City, Northwood, Albert Lea, Alden, Blue Earth and Elmore.

The Automobile Blue Book contains running directions and optional routes between these two points.

DAYTON, O., TO LOUISVILLE, KY.

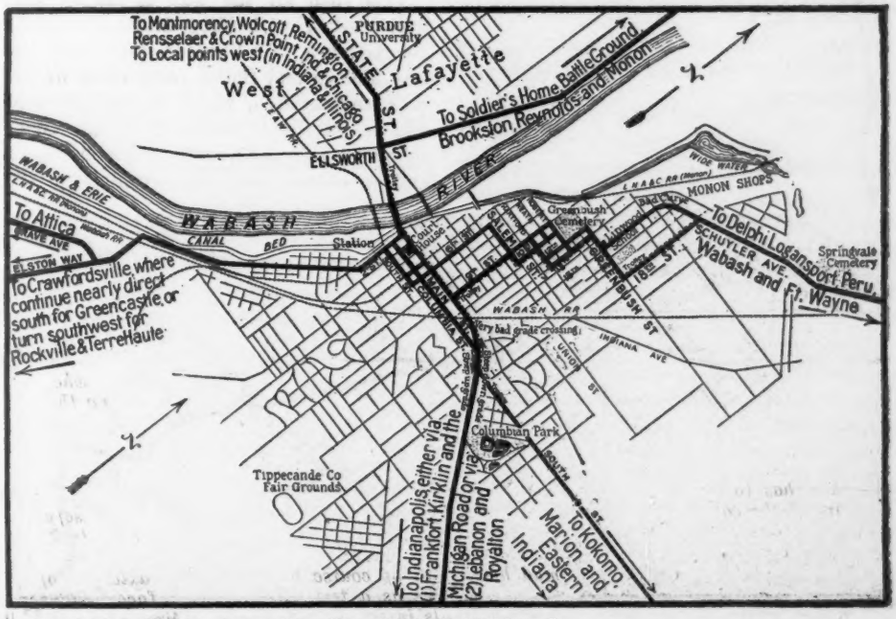
Dayton, O.—Kindly publish in the Routes and Touring Information columns a route from Dayton, O., to Louisville, Ky., so as to pass through Oldenburg, Ind. I desire to make this trip about June 25.—H. A. Stengel.

Leaving Dayton go west through Kingsville, New Lebanon, Johnsville, Alexandria, Eaton; thence south, going through Camden, Somerville, Collinsville, Seven-Mile, Hamilton. From this point on the route lies through Millville, Mt. Carmel, Brookville, Oldenburg, Greensburg, Columbus, Jonesburg, Seymour, Uniontown, Crothersville, Scottsburg, Vienna, Underwood, Henryville, Memphis, Sellersburg, New Albany, Louisville.

MINNEAPOLIS TO PARKSTON, S. D.

Parkston, S. D.—Editor Motor Age—Through the Routes and Touring department will Motor Age furnish me with a route from Minneapolis to Parkston, S. D., giving the towns passed through and the mileage?—E. J. Mueller.

Motor Age would advise you to go by way of Lake Calhoun, Lake Harriet, Edina Mills, Chaska, Jordan, Belle Plaine, Le Seuer, St. Peter, Kasota and Mankato. Minneapolis to Mankato registers 84.9 miles. The remainder of the route is through Garden City, Vernon Center, Amboy, Winnebago, Blue Earth, Guckeen, Fairmont, Sherburn, Jackson, Spirit Lake,


To Monimorency, Wolcott, Remington, Rensselaer & Crown Point, Ind. & Chicago
To Local points west (in Indiana & Illinois)
PURDUE University
STATE ST.
Lafayette
West
To Soldier's Home, Battle Ground, Brookston, Reynolds and Monon
ELLSWORTH ST.
WABASH & ERIE CANAL TOWPATH
WABASH RIVER
WABASH CANAL BED
To Attica
ELSTON WAY
To Crawfordsville where continue nearly direct south for Greencastle, or turn southwest for Rockville & Terre Haute
MONON SHOPS
To Delphi Logansport Peru
Springvale Cemetery
SCHUYLER AVE.
Wabash and Ft. Wayne
WABASH R.R.
Columbian Park
Tippecanoe Co. Fair Grounds
To Indianapolis either via (1) Frankfort Kirklin and the Michigan Road or via (2) Lebanon and Royalton
To Kokomo, Marion and Eastern Indiana

Copyrighted by the Automobile Blue Book Publishing Co.

CITY MAP OF LAFAYETTE, IND., WITH MOTOR EXITS

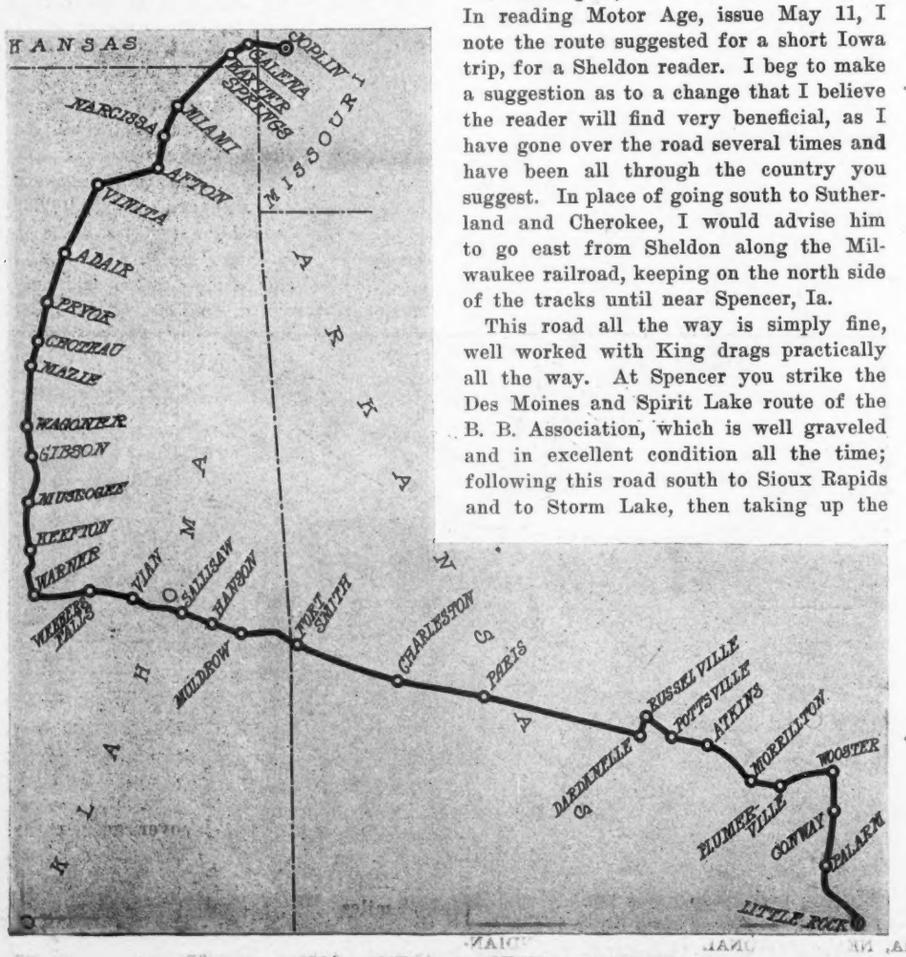
Okaboji, Arnolds Park, Milford, Spencer, Harley, Sanborn, Evander, Sheldon, Boyden, Hull, Perkins, Lakewood, Rock Rapids, Lester, Larchwood, Benclare, Sioux Falls, Hartford, Humboldt, Montrose, Salem, Spencer, Farmer, Riverside, Mitchell, Ethan and Parkston. From Garden City to Spencer is 122.7 miles and from Sioux Falls to Mitchell 75 miles.

FROM JOPLIN TO LITTLE ROCK

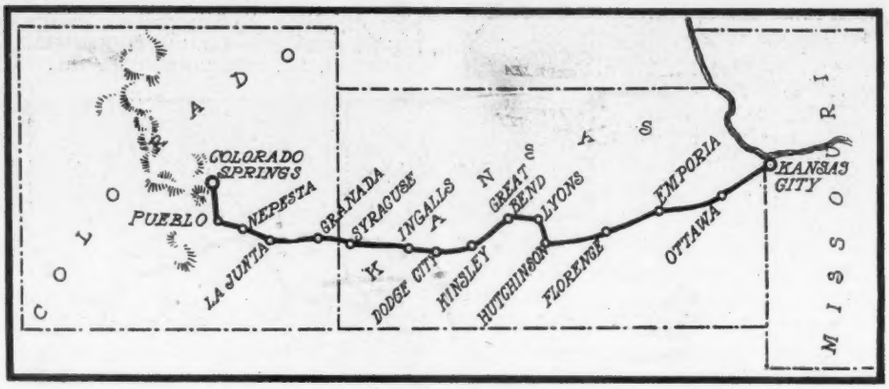
Marion, Ind.—Editor Motor Age—As I am contemplating driving my car from Joplin, Mo., to Little Rock, Ark., could Motor Age furnish me with a map or guide, or route information between these two points?—O. E. Halderman.

You are compelled to make a rather roundabout trip between Joplin, Mo., and Little Rock, Ark., especially on the Joplin end of the route. The towns passed through from Joplin are: Galena, Baxter Springs (Kas.), thence over good gravel road into Oklahoma, going through Miami, Narcissa, Afton, Albia, Vinita. From this point follow the M. K. & T. railroad as far as Wagoner; thence to Fort Gibson and Muskogee. From Muskogee go to Keefeton, then to Warner, Webber's Falls, Vian, Sallisaw, Hanson, Muldrow, Roland, Cherokee, Fort Smith.

From Muskogee to Fort Smith the roads are good until Sallisaw is reached; from this point on, through the Ozark mountains, the roads are not good. You must not be afraid to ford streams in Oklahoma or fear chuck holes, for all are found to have rock bottom. The Fort Smith-Little Rock section of the journey is thr ugh Charleston, Paris, Dardanelle; cross the Arkansas river to Russellville, Pottsville, Atkins, Morrelton, Plumerville, Wooster, Conway, Palarm, Little Rock. Motor Age has routed you from Plumerville to Conway via Wooster, a distance of some 10 miles out of the way, but this has been done to avoid the Caddo bottoms, which, it is understood, are impassable about two-thirds of the year.



A WINDING ROUTE FROM JOPLIN, MO., TO LITTLE ROCK



THE NEW SANTA FE TRAIL SUGGESTED AS BEST ROUTE THROUGH KANSAS FROM COLORADO SPRINGS TO KANSAS CITY AND OTHER POINTS EAST OF THE MISSOURI RIVER AS PART OF THE ROUTE FROM DENVER TO CHICAGO

SUGGESTS NEW IOWA ROAD

Sioux Rapids, Ia.—Editor Motor Age—In reading Motor Age, issue May 11, I note the route suggested for a short Iowa trip, for a Sheldon reader. I beg to make a suggestion as to a change that I believe the reader will find very beneficial, as I have gone over the road several times and have been all through the country you suggest. In place of going south to Sutherland and Cherokee, I would advise him to go east from Sheldon along the Milwaukee railroad, keeping on the north side of the tracks until near Spencer, Ia.

This road all the way is simply fine, well worked with King drags practically all the way. At Spencer you strike the Des Moines and Spirit Lake route of the B. B. Association, which is well graveled and in excellent condition all the time; following this road south to Sioux Rapids and to Storm Lake, then taking up the route as you have suggested for the balance of the way. The reason for making this change is a splendid road from Sheldon to Storm Lake and avoiding a rough and somewhat hilly country from Sutherland to Cherokee. Cherokee is in the hills along the Little Sioux river and the worst hill in this country is coming out of Cherokee to the east

THREE FORKS FEELS SLIGHTED

Three Forks, Mont.—Editor Motor Age.—In Motor Age, issue May 18, under the head of Denver-Seattle Route in the Routes and Touring Information department, it states, "Do not go into Three Forks; but keep to the right of Three Forks river." As we do a great deal of motoring and recognize the importance of correct information I thought perhaps some of the readers of Motor Age might appreciate a little information along this line. If you are going through Helena this information is all right; however, if the motorists desires a route through Butte, the best route is through Three Forks. And by the way, we have a thoroughly up-to-date hotel and a garage that carries all kinds of supplies and is equipped to make most any kind of repairs.—J. A. Siffert.

FROM OREGON TO MINNEAPOLIS

Portland, Ore.—Editor Motor Age—If possible I wish Motor Age would give me the two best routes for motor cars from Portland to Minneapolis—F.

Leaving Portland for Omaha via the southern route outlined in the map herewith, you will pass through Salem, Prineville, Burns, Boise City, Bliss, American Falls, Pocatello, Granger, Rock Springs, Rawlins, Laramie, Cheyenne, Julesburg, Ogallala, North Platte, Lexington, Kearney, Grand Island, Columbus, Fremont, Omaha.

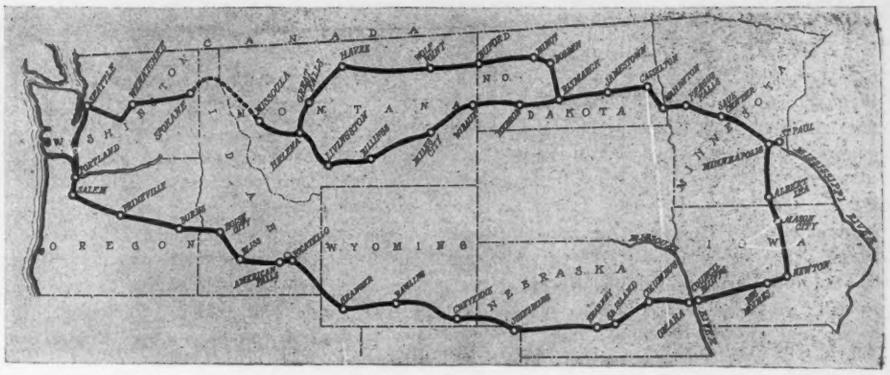
At Omaha you should cross to Council Bluffs and travel on the river-to-river road as far as Newton, Ia. The towns are Underwood, Minden, Avaco, Walnut, Atlantic, Brayton, Exira, Guthrie Center, Monteith, Redfield, Ortonville, Des Moines, Mitchellville, Colfax and Newton. Leaving the river road and traveling directly north to Minneapolis you will pass through Vancouver, Kelso, Chehalis,

Hampton, Sheffield, Rockwell, Mason City, Manly, Kensett, Northwood, Glenville, Albert Lea, Geneva, Owatonna, Milford, Faribault, Dundas, Farmington, Rosemont and St. Paul.

To take the northern route outlined in the sketch map, you should go north from Portland via the Pacific railway, passing through Vancouver, Kelso, Chehalis, Centralia, Tacoma, Seattle. From Seattle to Spokane will be found a mountainous route, and you should be well provided with block and tackle, shovel and plenty of rope and other devices. Leaving Seattle, go through Georgetown, Rnerton, Renton, Issaquah, Fall City, Snoqualmie. Some motorists, however, ship their cars from Seattle to Snoqualmie or Cle Elum. From this point go to Ellensburg, where you will cross the Wenatchee mountains to Malaga, thence through Wenatchee, Orondo, Douglas, Coulee City, Hartline, Almira, Gogan, Wilbur, Creston, Fellows, Reardon, Medical Lake, Spokane. Here you will be compelled to ship your car to Missoula, and some tourists ship it to Missoula from Seattle, rather than attempt the trip. At Missoula you will strike the Northern Pacific railroad which follow to Bonner, and the Blackfoot river to Lincoln. From Lincoln to Helena you will find good roads practically all the way. To Great Falls, a distance of about 110 miles, is over excellent roads, going over what is known as the Bird Tail divide.

From Great Falls continue through Benton, Havre, Chinook, Harlem, Malta, Saco, Hinsdale, Glasgow, Nashua, Wolf Point, Popular, Culbertson, Buford, Williston, White Earth, Berthold and Minot. Minot to Minneapolis lies through Dogden, Turtle Lake, Canfield, Bismarck, Jamestown, Casselton, Wahpeton, Fergus Falls, Alexandria, Sauk Centre, St. Cloud, Melrose, St. Cloud, Beeker, Anoka and Minneapolis.

From Helena to Bismarck, N. D., provided you do not wish to go the northern route through Havre and Minot, Motor Age suggests you go by way of Livingston, Springdale, Big Timber, through the Dead Man's Canyon to Merrill, thence Columbus, Park City, Laurel, Billings. Thence passing through Huntley, on to the north side of the Yellowstone river, cross at Huntley to the south side, then to Pompey's Pillar over Bull mountain to Custer, cross the river to the north side at Custer, follow the old Custer trail to Forsythe. Keeping on the north side of the river follow the traveled road into Miles City. From Miles City to Bismarck, N. D., pass through Terry, Glendive, Wibaux, Sentinel Butte, Medora, Belfield, Dickinson, Taylor, Hebron, Glenullen, New Salem and Mandan.

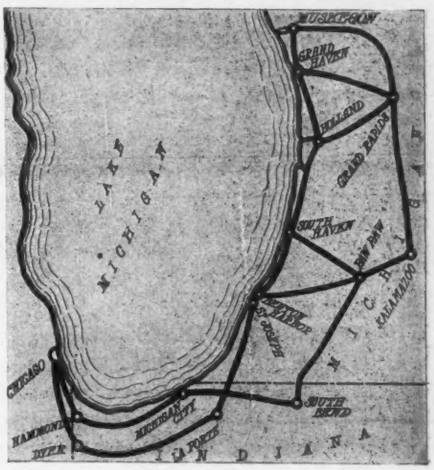


TWO ROUTES FROM OREGON TO MINNEAPOLIS

CHICAGO TO MUSKEGON

Chicago—Editor Motor Age—As a subscriber I would like to ask Motor Age for the best road from Chicago to Muskegon, Mich. I would consider it a great favor, as I wish to go about the 4th of July.—L. M. Ehrhart, Jr.

From Chicago go to South Bend via Michigan City, passing through the towns of South Chicago, Hammond, Highlands, Hobart, McCool Station, Chestertown, Michigan City, Rolling Prairie, New Carlisle, South Bend. This is a popular route. From South Bend go to Muskegon via Kalamazoo and Grand Rapids, a distance of about 158 miles. The route is over variable roads of a gravelly nature, but generally quite good, and through the towns of Niles, Summerville, Pokagon, Dowagiac, Decatur, Paw Paw, Kalamazoo, Coopers Corners, Plainwell, Martin, Bradley, Wayland, Corinth, Cutlerville, Grand Rapids, Ballard, Kent City, Muskegon.



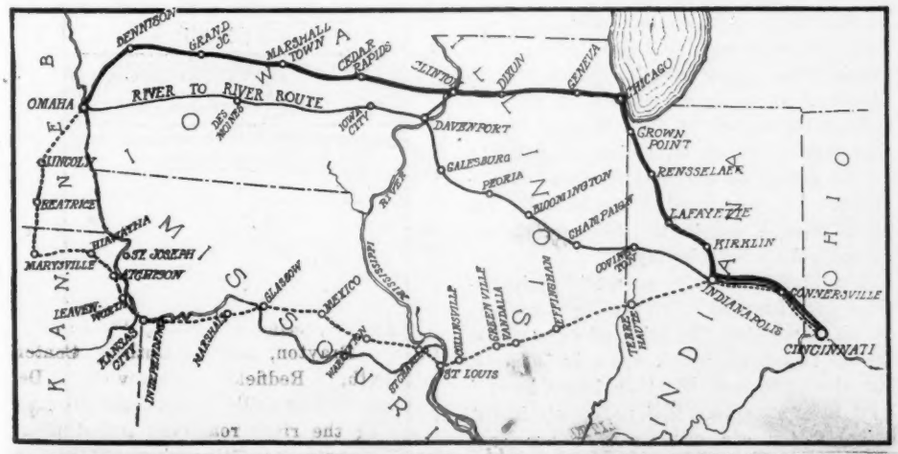
SHORT RUN FROM CHICAGO

An alternate route from Chicago is through South Chicago, Hammond, Highlands, Hobart, Valparaiso, Laporte, Hudson Lake, Buchanan, St. Joseph, Benton Harbor, Riverside, Coloma, Watervliet, Paw Paw Lake, South Haven, Ganges, Saugatuck, Graffschap, Holland, Grand Haven, Ferrysburg, Muskegon. This shore route is picturesque, but in bad weather is not recommended. For complete running directions, etc., you are referred to the Blue Book.

SHORT WISCONSIN ROUTE

Wausau, Wis.—Editor Motor Age—Through the Routes and Touring Information columns will Motor Age outline a route from Wausau to Madison, Wis.?—Dr. David T. Jones.

For this tour from Wausau pass through Schofield, Wilder, Mosinee, Crockers Landing, Stevens Point, Plover, Keene, Plainfield, Hancock, Liberty Bluff, Westfield, Packwaukee Junction, Portage, thence to Baraboo. Before leaving Baraboo it will be worth your while to make a detour to Kilbourn, for here are the famous Dells of Wisconsin. This side trip is only 14 miles in length and is over good roads. Returning to Baraboo, follow the route of the Blue Book to Madison, a distance of 42 miles from Baraboo, going through Prairie Du Sac, Sauk City, Springfield Corners, Ashton, Pleasant Grove, Madison.



A ROUTE FROM CINCINNATI TO OMAHA, NEB.; OPTIONAL ROADS FROM INDIANAPOLIS. HEAVY LINE, PREFERRED ROUTE; LIGHT LINES, OPTIONAL ROUTES.

The Readers'

EDITOR'S NOTE — In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects.. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

GENERATOR FOR TAIL LAMP

NEWBERRY, S. C.—Editor Motor Age—I would like to say to the brethren, through the Readers' Cltaring House, for the good of the order, that those using generators for gas lights can have their cars lighted up to perfection by connecting up all, even the tail lamp, to the generator, and for this reason I have found that a generator to give good lights must have a certain pressure, and to get this pressure the needle valve must be opened up widely, hence there will be so much gas generated anyway, which will be enough to furnish lights for all five lamps. I have adopted this plan and it works fine; in fact, my car is in a perfect blaze of light. It is quite a simple matter to connect them up. Almost anyone can run the brass tubing, and it costs very little; the joints can be soldered with a small spirit lamp when a blow torch is not available. I also use a small soft rubber bag a few inches from the point of emergency of gas from generator, which acts as a drain or trap for the water, as well as keeping an even pressure of gas.—Dr. Meldau.

WHY CARBURETER LEAKS

Sauk Center, Minn.—Editor Motor Age—A leaky carbureter is caused by one of two things; either the float is too high or the gasoline valve does not seat properly and does not shut off the in-flowing gasoline as it should do. If you are not experienced in carbureter matters you had better take the car to a good garage and have the job done as it should be, and then let it alone and not try to tinker with it.

An engine starts very hard, indeed, if the carbureter is not properly adjusted, and I have been called upon to fix many a car that was all right in every way, but the carbureter adjustment was entirely wrong.

One of the best ways to find out why a car will not start up promptly on second or third turn of crank is to look for carbureter troubles, and I am most certain that aside from minor causes, the hard-starting motor is caused by too much or too little gasoline. Some will say, "Why is this when the motor runs nicely after starting," and here is where they fail. Of course the motor runs well after starting, but you must remember the suction of each cylinder is far greater when running than when you crank it, and you get a fairly good mixture after the start.

My rule is this: Never allow the gasoline to be above the spraying nozzel, but always see that it is just level with it. All carbureters are provided with fine and perfect adjustments and one must bear in mind that this adjustment may not be perfect when shipped to the motor car manufacturer, and his workmen may not adjust it perfectly when they place it in the car, hence the use of the demonstrating car to sell cars. The salesman shows you a car and gives you a ride in it, that he knows is in perfect condition, and does not take one fresh from the crate, if his head is level, usually..

The valve that regulates the flow of gasoline from the tank to the mixing chamber must be set so as to give the correct amount of gasoline to the spraying nozzle, and if you do not get this adjustment from the agent when you buy the car you will have to get it done by yourself or some one who understands these fine adjustments of motor cars. I once had occasion to go into these matters of adjustment in a public place, when a young lad could not get his motor to go. After repeated trials of cranking he looked around to see the crowd of faces expectantly waiting for him to go. I carefully asked if he was sure everything was in right order, and he assured me they were, and asked if I knew anything about a car. I explained, and he asked me to start it up for him and find the reason why it would not go when it went all right when he stopped. I examined the carbureter and found the float too low, so the motor was very difficult to start when cold. I set the gasoline valve so as to make a level with the spraying nozzle, that is so the gasoline would be at a level with nozzle, and tested the vibrators, then I retarded the spark, opened the throttle, primed very slightly with priming wire at the front of radiator, cranked it and away it went on the third turn of the crank. The young man looked very much surprised at the easy manner in which I started the motor. I then stopped it and told him to crank it, which he did, the motor going at the second turn of the crank. He now wanted me to fully explain what I did to the carburetor, and he remembers to this day.

A colored blacksmith once told a circuit-rider preacher that after setting two shoes on his horse that the price of $4 was not for the two shoes, which was only 50 cents, but the $3.50 was for "de know how!" I am fully convinced that nearly all, if not quite, motor car engines that are condemned as no good are not understood by the one who owns or operates them, and this is more especially observable in the one who has not had the mechanical experience necessary to make him proficient and clever in the use of the auto engine.

This is the way I do it.

Shut off gasoline at the tank, take out the valve, adjust as nearly as possible to the float level, then replace, turn on the gasoline and see if it overflows the spraying nozzle; if so, shut off the gasoline and turn the valve screw down to allow less gasoline to enter the carburetor; try and repeat until the level is accomplished and you are sure to go when you turn the crank, everything being, of course, in running order.—A. D. Carpenter.

NOTICE

Motor Age has received communications addressed to the Readers' Clearing House from the following named towns and nom de plumes:

Lawrence, Kan.—A Subscriber.
Chicago—Subscriber.
Washington, Ia.—A Subscriber.
Shreveport, La.—Reader.
Lawrence, Kan.—R. D. M.
McLean, Ill.—A Subscriber.

These communications will be held until the proper signatures have been received.. All communications written over a nom de plume must bear the writer's signature, otherwise such communications will not be answered. These signatures are wanted as proof of the authenticity of the inquiries.—Editor Motor Age.

TIGHTENING WHEEL SPOKES

Edgerton, Wis.—Editor Motor Age—I noticed in the June 22 issue of Motor Age, page 26, a party asking for the name of a filler to tighten spokes of a car. I wish to say I have had trouble with one rear wheel which I easily remedied. I removed the flange or brake drum and hub. I took small pieces of a saw which I used for wedges and drove a wedge between every other spoke. Then I soaked the ends of the spokes at the hub with hot boiled linseed oil, and let the oil run freely in the cracks for 3 or 4 minutes, after which I replaced the hub and brake drums and screwed up the flange bolts tightly. I did not use the

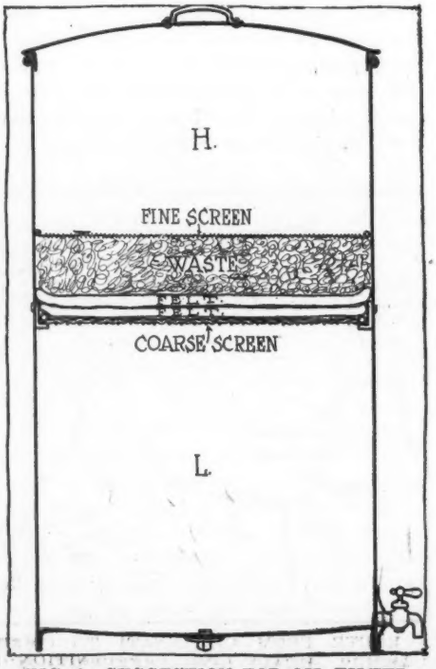


FIG. 1—SUGGESTION FOR OIL FILTER

Clearing House

EDITOR'S NOTE—To the Readers of the Clearing House columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

wheel on the car for 12 hours, during which time the spokes became firmly tightened. The longer the wheel stands without use the better. Since then I have not heard a crack from the wheel. In putting in the wedges one should be careful not to get them too large so as to interfere with the hub wedges. I have found this method very satisfactory and hope it will remedy other wheels.—A. T. Earle.

REAR AXLES DEFINED

Stillman Valley, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

1—Is any part of the load carried on the outer shell of a semi-floating rear axle. I understand the bearings are all within the outer shell.

2—What are the first indications to a novice driving a motor car that he is using a poor grade of cylinder oil.—Novice.

1—Yes; the load being supported by the chassis springs, and the springs being supported by the axle tubes, or outer shell as you term it, the load is carried on the outer shell in both the semi-floating and floating types of rear axles. The difference between the floating and semi-floating axles is that in the semi-floating axle design the axle casing or outer shell has a bearing on the internal driving shafts to which the wheels are secured; whilst in the floating type of axle, the wheels are attached directly to the axle casing or axle tubes, and the internal drive shafts do not support the weight of the car frame and body, but simply drive the wheels.

A floating type of rear-axle is illustrated in Fig. 3, C representing the axle casing, H the hub of the wheel, S the end of the spokes of the wheel, and B the bearings. It will be noticed that the wheel bears directly on the casing C and is held by the nut N. The driving shaft F has a flanged end G, which forms a clutch that meshes with the outer edge of the hub H, the depth of the notches in the clutch and hub being represented by the dotted lines D. The clutch and shaft are held in place by the hub-cap, and in this type of rear axle construction the transverse driving shafts F on either side of the driving gear and differential mechanism may be pulled out of the axle by simply removing the hub cap and without removing the wheel. Thus the differential and driving gear unit may also be removed from the floating type of axle without removing the axle from the car.

In Fig. 4 a semi-floating type of rear axle is shown. In this construction the wheel is attached directly to the transverse driving shaft and secured thereon. The driving shaft in this case not only serves to propel the wheel, but it also supports the weight of the car. The hub H of the wheel in this illustration is a snug fit on the end of the transverse shaft F and the Woodruff keys K and the nut N serves to secure the wheel thereto. The hub cap HC is not absolutely necessary in this construction, as it merely serves as an ornament, a clothes guard, and to protect the nut N from being damaged by rust.

2—The use of a poor grade of oil generally causes excessive heating, either because it cannot withstand the heat in the cylinders and thereby gives rise to excessive friction; or, being readily burnt, causes excessive and premature formation of carbon deposits in the cylinders with its attending pre-ignition and overheating.

SIMPLE OIL FILTER

Guttenberg, Ia.—Editor Motor Age—Through the Readers' Clearing House kindly answer the following questions:

1—Kindly give description of a simple and efficient filter for gas engine oil or kerosene that can be made at a small cost.

2—Could a unit of a common jump spark coil be used as a master vibrator in connection with a four-unit coil with the vibrators shorted? If so, give wiring diagram. —R. Keumpel.

1—A simple design for an oil or kerosene filter which could be made at a small cost is shown in Fig. 1. It can be made from a round or square can of any desired capacity, and simply consists of a filtering material substantially suspended midway between the top and bottom of the can. The filtering material comprises in the order shown a fine screen on top, then a few inches of waste packed, and a couple more layers of felt. The felt layers should be about ½ inch thick; at the top the fine wire screen is designed to catch very coarse particles or substances; and the filtering material is supported on a heavy coarse screen which is attached to a heavy wire ring that rests on lugs soldered or riveted at intervals around the circumference of the can. Soldered lugs are preferable as there would be less liability of leakage. If the oil should not filter through quickly enough with one piece of felt above the waste, put it below the waste with the other layers. The oil should be placed in the top chamber H and the outlet cock for letting the strained oil out of the lower chamber L should be placed a little above the bottom to avoid the passage of any sediment that might collect. The bottom of the vessel should curve and slant downward toward the middle and a plug placed at the lowest point to facilitate draining and cleaning.

2—Yes. A wiring diagram of a regular master vibrator coil is shown in Fig. 2, and all that will be necessary to convert an ordinary vibrator coil for use with a master vibrator will be to make similar connections between the master-vibrator unit and the other units; screw down the vibrators of the vibrating units so as to short

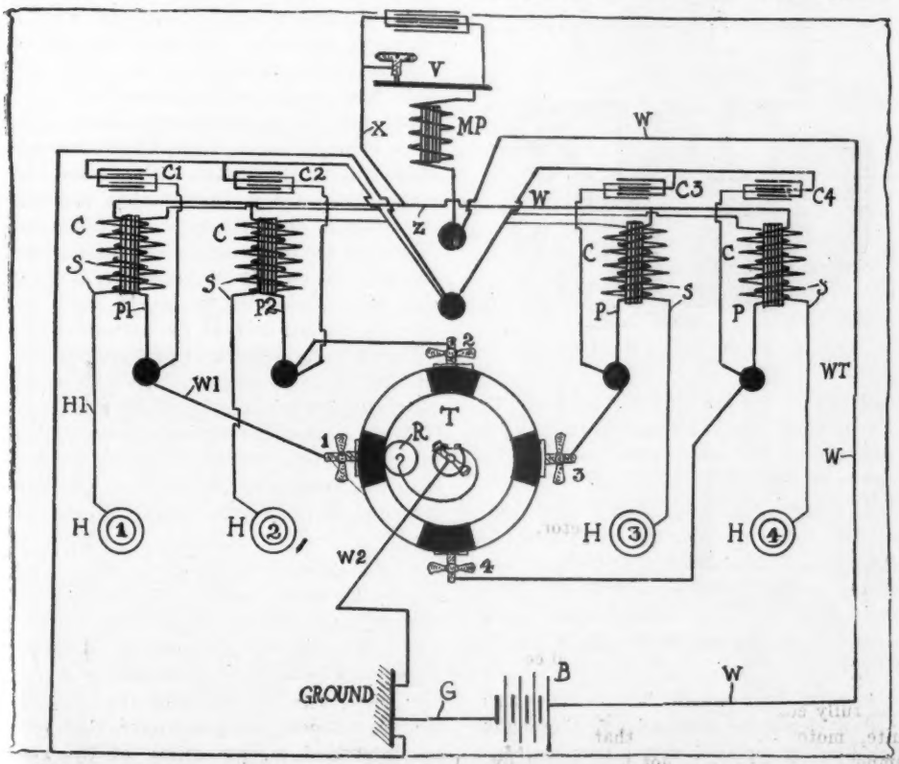


FIG. 2—WIRING DIAGRAM OF IGNITION SYSTEM WITH MASTER VIBRATOR COIL

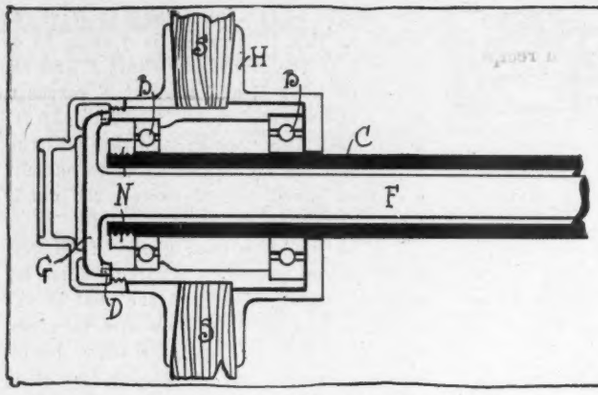


FIG. 3—A FLOATING REAR AXLE END

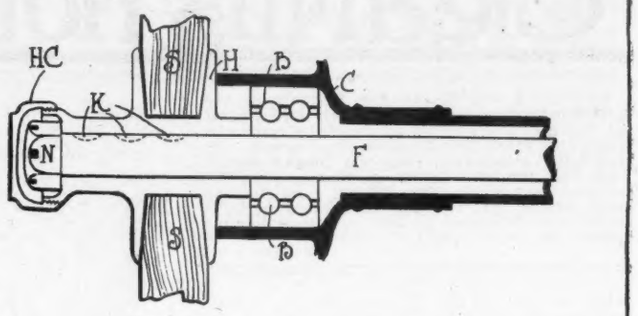


FIG. 4—A SEMI-FLOATING REAR AXLE

them, or convert them into non-vibrating units; and ground, or short-circuit, the secondary or high-tension winding of the master-vibrator coil.

ADJUSTING FORD CARBURETER

Mayville, N. D.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, answer the following questions:

1—What is the best way of adjusting a Kingston carbureter on a Ford?

2—Who invented the gasoline engine?

3—Does a non-vibrating coil need as much attention as a vibrating coil?

4—Which lasts the longer?

5—Give the advantages and disadvantages of the double-opposed, four-cylinder and the vertical four-cylinder motors.

6—On which is it the easier to grind the valves?

7—The double-opposed, four-cylinder, horizontal engine takes the same amount of gasoline as the vertical motor, does it not?

8. Can kerosene be used in a Ford with out special arrangement?

9—Is the Gray & Davis dynamo driven at one correct speed by the engine, and how?

10—Give the advantages and disadvantages of the force feed lubrication and the splash system. Which proves the most economical of the two systems?—O. Lindaas.

1—The usual method of regulating the Kingston carbureter used on the Ford cars is to start the motor, advancing the throttle lever to about the sixth notch and with the spark retarded; next loosen the locking screw, Fig. 5, and turn the needle valve to the right, to cut down the supply of gasoline, until the engine begins to mis-fire; then gradually increase the gasoline feed by opening the needle valve, turning it to the left, until the motor picks up and reaches its highest speed without black smoke coming from the exhaust. Having determined the point where the motor runs at its maximum speed, the needle valve locking screw should be tightened to prevent the adjustment being disturbed.

Should the mere adjustment of the carbureter fail to make the motor run satisfactorily, there are a number of other possible causes for the trouble which must first be removed before good service can be obtained; therefore, when adjustment fails it is advisable to remove the carbureter and give it a thorough cleaning and inspection, being careful to note the correct relation of all parts as they are being disassembled. Mis-firing, or loss of power, may be caused by dirt or water in the carbureter, an obstructed feed pipe, a clogged spraying nozzle, a bent or grooved needle valve, a fuel-soaked float, a poor grade of gasoline, or too lean or too rich a mixture.

A rich mixture will not only quickly foul up the cylinders, pistons and valves with soot, but will tend to overheat the cylinders, and is likewise wasteful of the fuel. It often will choke the engine and cause mis-firing at slow speeds, although at high speeds the machine will run perfectly. The mixture should be kept as lean as possible and at the same time obtain the full power of the motor.

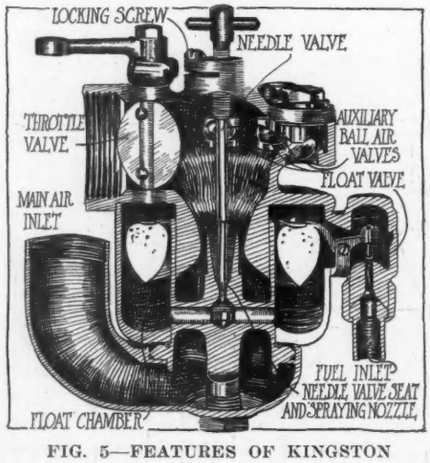


FIG. 5—FEATURES OF KINGSTON

A weak mixture generally will result in back-firing through the carbureter, for the reason, it is claimed, that the gas burns slowly in the cylinders, and is still burning when the inlet valves open again, which causes the gas in the intake pipe to be ignited.

A cork float which has become fuel-soaked should be removed and thoroughly dried out or replaced with a new one, then given a couple coats of shellac varnish to make it waterproof. If the float is adjusted too low, starting will be difficult; if too high it will cause the carbureter to flood or leak.

The spraying nozzle having a very small opening, a minute particle of grit or other foreign matter may clog up the orifice, and as a result the motor will begin to misfire and slow down as soon as it has attained a speed demanding more gasoline than can pass through the clogged nozzle. This is accounted for by the fact that at high speeds the increased suction will draw the particles of dirt, etc., into the nozzle, which, under the reduced suction of low speeds, would lie undisturbed at the bottom of the float chamber or nozzle. If the needle valve seat has been roughened or damaged by screwing the needle valve down upon it, or the needle valve itself bent or its point grooved, either a new valve and seat, both of which are removable, should be fitted, or the old valve straightened and reseated by grinding it in with a little powdered pumice or emery and oil. This is done by applying a paste of emery or pumice and oil to the seat of the valve and rotating it in the valve seat until fine, smooth surfaces are obtained.

The presence of water in the carbureter, even in small amounts, will prevent easy starting and the motor will mis-fire and stop. As water is heavier than gasoline it settles to the bottom of the tank and in to the sediment bulb along with other foreign matter. It is, therefore, a good plan to occasionally drain the tank by opening the pet cock at the bottom of the sediment bulb. This will prevent the possibility of an over-accumulation of waste matter which might otherwise work down into the carbureter through the gasoline line. The careful driver will prefer to take the extra trouble of straining the gasoline through chamois skin when filling the tank.

2—The gasoline engine was invented long before the term gasoline, which is an arbitrary name first given to certain gravities of naphtha used for making illuminating gas for house plants. Assuming, therefore, that it is the origin of the internal combustion motor, or gas engine, that you are interested in, the origin of the gas engine is but imperfectly known. Although

the ideal principle of explosive power was conceived some 20 years since, and experiments made with gunpowder as the explosive element, it was not until the last years of the eighteenth century that the idea took a patentable shape, and not until about 1826, when Brown's gas-vacuum engine was brought out, that a further progress was made in England by condensing the products of combustion by a jet of water, thus creating a partial vacuum.

Brown's probably was the first explosive engine that did real work. It was clumsy and unwieldy and was soon relegated to its place among the failures of previous experiments. No approach to active explosive effect in a cylinder was reached in practice, although many ingenious designs were described, until about 1838 and the following years. Barnett's engine in England was the first attempt to compress the charge before exploding. From this time on to about 1860 many patents were issued in Europe and a few in the United States for gas engines, but the progress was slow, and its practical introduction for power came with spasmodic effect and low efficiency. From 1860 on, practical improvement seems to have been made, and the Lenoir motor was produced in France and brought to the United States. It failed to meet expectations, and was soon followed by further improvements in the Hugon motor in France, 2 years later, followed by Beau de Rocha's four-cycle idea, which has been slowly developed through a long series of experimental trials by different inventors. In the hands of Otto and Langen a further progress was made, and numerous patents were issued in England, France and Germany, and followed up by an increasing interest in the United States.

3—No. A non-vibrating coil requires no attention whatever, other than to see that the terminal connections are kept tight. A vibrating coil must have its vibrator contact points adjusted, cleaned and replaced occasionally.

4—Properly cared for and protected from heat and moisture, both should last indefinitely. Except for the adjustment and renewal of the contact points, etc., one should last as long as the other.

5—The double-opposed, four-cylinder, horizontal engine can be made lighter, is capable of better balance between reciprocating parts, can use a simpler and shorter crankshaft, is compact and has a low center of gravity; but on account of its shape and practically the necessity of using L-type cylinders, it only is practicable for commercial car, marine, railway and such service, where a low, flat power unit can be used advantageously. As for the vertical motor, it is most popular; perhaps because any type of cylinder can be employed with it without the valves being inaccessible, the external equipment can be more symmetrically arranged without overcrowding, and it is the most practical for the style of motor car construction that now predominates.

6—All depends upon the arrangement of the motor in the chassis, the style of valve construction and the facilities provided for the grinding of the valves.

7—Yes. Other things being equal, the amount of gas consumed depends upon the cylinder volumes.

8—No. The carbureter will not vaporize kerosene sufficiently except when the motor is very warm and running at a fair rate of speed. Starting on kerosene would be fairly impossible.

9—Yes; the Grey & Davis lighting dynamo is designed to run at a speed of 1,200 revolutions per minute. The means employed to keep the dynamo running at this speed consists of a simple centrifugal governor of a type long in use, but operating a friction clutch of a new design shown in Figs. 6 and 7; Fig. 6 being a photograph of the clutch partly dissembled; and Fig. 7 a sectional drawing of the dynamo with the clutch mechanism intact. One face F of the clutch is an aluminum disk running on three ball bearings, driven direct by belt or gearing from the engine. The disk is faced with asbestos fiber ⅛ inch thick. The other clutch face C is a smooth cast iron disk on the dynamo shaft, pressed against the fiber face by a large vanadium steel spring, the spring itself being controlled by a pair of centrifugal governor weights W. When the speed of the iron disk exceeds 1,200 revolutions per minute, corresponding to a car speed of about 12 miles per hour, the governor weights cause the clutch to release its hold so that the dynamo shaft cannot run over its set speed. The governor weights are so proportioned that the pressure of the spring at normal speed will drive the dynamo with a 50 per cent overload, but will release completely at 5 per cent over speed. In operation, the clutch faces are held together by the spring as the engine speeds up, until the aluminum disk exceeds 1,200 revolutions per minute, when the clutch slips enough to hold the dynamo speed always at 1,200, whether the engine speed corresponds to a car speed of 13 or 60 miles per hour.

10—The advantage of the forced lubricating system is, that a generous supply of oil usually is assured at the place where it is most needed, regardless of the grade on which the motor may be operating. The chief advantage of the splash system is its freedom from piping or ducts which are liable to leak, and its consequent simplicity of operation and manufacture. As for the relative advantages of the two systems, all depends upon the design and construction of the motor.

RUBBER ON THE SIDES

Sargent, Neb.—Editor Motor Age—Rural road conditions are quite different from paved or even unpaved streets. At all seasons of the year we have many banks or ledges and narrow ruts against which tires will receive chafing on their sides. Much of the year we have considerable stretches of narrow ruts or channels in which tires wedge and receive extremely heavy chafing on both sides. Consequently, our tires are often utterly ruined beyond repair when the tread is scarcely preceptibly worn. This makes it obvious that we need tires constructed on different lines from those used by our city cousins. We need tires with nearly as much rubber on the sides as on the tread. Can Motor Age give me the names of manufacturers making such a tire?—W. T. Cropper.

Though it is possible that some makes of tires have a little more rubber on the sides than others, Motor Age has no data showing which makes are the most desirable in this respect, but would like to hear from any tire maker or user that can assist the subscriber in finding what he wants.

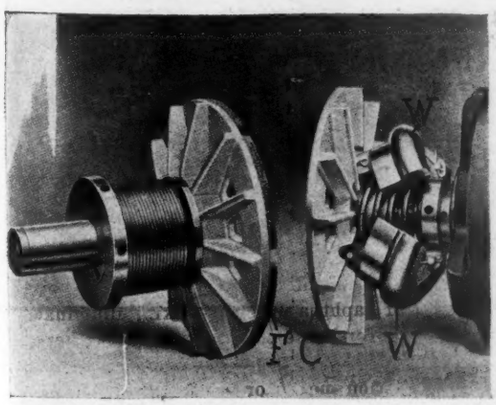


FIG. 6—GREY & DAVIS DYNAMO CONTROL CLUTCH

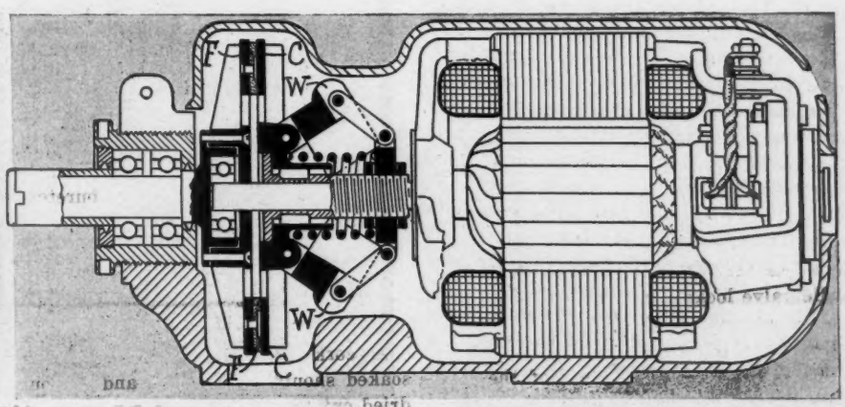


FIG. 7—SECTIONAL DRAWING OF GREY & DAVIS LIGHTING OUTFIT

1912 Rutenber Motor

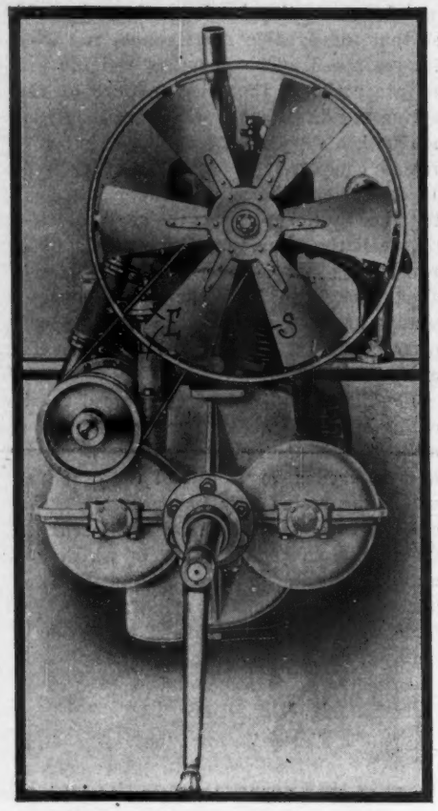


FIG. 1—1912 RUTENBER MOTOR

THE Western Motor Co., which for years has manufactured the Rutenber motor for the motor car trade, announces for 1912 an improved type known as model X which has several alterations as compared with this year's one. This is a motor with a 4⅛-inch bore and 5¼-inch stroke and uses the individual cast L-type cylinder with valves on the left side. In this respect it is built along the same lines as previous motors. Perhaps the most important change is the redesigning of the lower half of the crankcase so it has an extension portion A beneath the lower half of the flywheel, which was not used this year. The right side of the motor also shows an entirely new location for the water pump WP, which heretofore has been on the forward end of the camshaft, but now is on a separate shaft, which is continued rearward and drives the magneto. This places the pump in a more accessible position than heretofore.

In this connection there also is a difference in that the intake water pipes IP now enter the base of the waterjackets, whereas this year the intake pipe is over the heads of the cylinders, and lying alongside of the exit water pipes EP. When the intake and exit pipes were both along the cylinder heads partitions in the jackets were necessary, but with the new design this has been eliminated.

Still another important feature is the new manner of support. At the rear is a transverse tube T forming the two-point attachment at this end. At the front there is but a single supporting point, which is centrally located. Fig. 1, the front view of the motor, shows a spring S employed to maintain the tension of the fan belt. This also is shown in Fig. 3, in which it can be seen that the tension of this spring constantly tends to keep the belt tight.

As illustrated in Fig. 3, valve springs are now controlled by cover plates, one of which, C, is shown. This is an improvement over the present year's practice. Still another feature that presents itself is the presence of a series of cover plates D1, D2, D3 and D4. By removing any one of these plates access is afforded to the short horizontal levers which operate between the cams and the lower ends of the valve lifter rods.

In the ignition line, as already noted, the magneto is closer to the rear than heretofore, and the short vertical shaft used this year at the right front of the motor and carrying the timer on its upper end is shortened, the timer E being seen in Fig. 1.

From a manufacturing point of view much care has been taken with the motor. The cylinders are semi-steel castings and are given special heat treatments before and after machining. The valves are nickel steel heads electrically welded to carbon steel stems. These valves are opened through a horizontal lever mechanism, which bears against the rollers on the bottom of the lifter rods. The pistons are made long and carry five eccentric rings, the lowest ring being located at the piston pin center, and acting to prevent the piston pin working endwise and scoring the cylinder. The piston pin is a seamless steel tubing hardened and ground. The connecting rods are drop forgings. The crankcase is a two-part aluminum casting, the lower half being independent of all bearings and having incorporated with it an oil reservoir of 2 gallons capacity. Lubrication is from a gear-driven pump on the bottom of the timer shaft. This pump takes the oil through a strainer and delivers it to the main bearings of the crankshaft, and also to the pits beneath the connecting rod. On each connecting rod is a cap with an oil scoop which dips into the lubricant. The crankshaft is a heat-treated forging carried on five nickel babbitt die cast bearings. The drop forged camshaft is an integral cam, and is carried on three bronze bearings. It is located on the center line of the crankshaft, being offset from the center of the pushrods.

M. A. C. Vulcanizer

The M. A. C. vulcanizer, built by the Motor Appliance Co., Indianapolis, Ind., is a steam outfit as Fig. 4 shows. It is mounted on a portable stand carried on castors C, which allows of being pushed from one part of the garage to another, or out onto the sidewalk in case a repair has to be made on a car standing at the curb. It has a flexible extension part A which conducts the steam from the boiler to the vulcanizer on the tire, which greatly facilitates work on a car in the street. When gasoline is used as a fuel to heat the water, furnish the steam, it is carried in the base of the vulcanizer and a slight air pressure used to force it to the burner. The burner is of the ordinary blow torch type. The little steam boiler is tested to 200 pounds before being used, and steam pressure used for vulcanizing is 50 pounds.

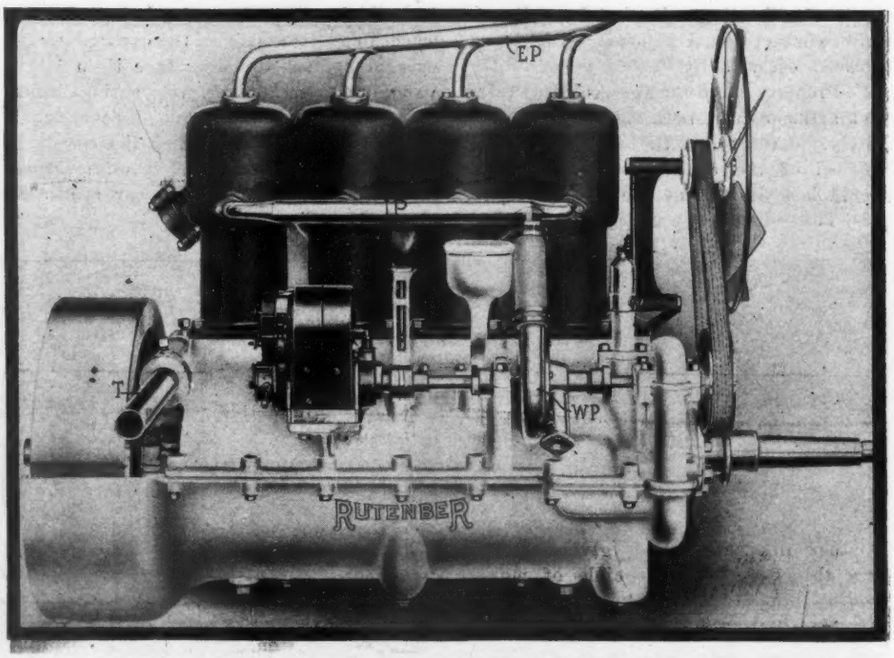


FIG. 2—RUTENBER MOTOR SHOWING NEW WATER CONNECTIONS, AND CRANKCASE DESIGN

The Motorists' Bookmen

In the Valley of the Avon

"THE Avon and Shakespeare Country," by A. G. Bradley, is a book of much value to any person who can travel through England in a leisurely manner, doing intensive sightseeing, and taking in the smaller details of sightseeing than is usually done by most travelers. It is not in any sense a guide book, but the author says, in the preface, that in writing of the valley of the Avon his hope is that "it may be the means of persuading some to extend their Stratford pilgrimage a little farther, and make time to descend the valley of the Avon with as much leisure as may be to its mouth at Tewkesbury, and genuine, unspoiled rural England as could gain thereby as felicitous a glimpse of anywhere be found. Published by E. P. Dutton & Co., New York. $3.50 net.

Motion Study

"There is no waste of any kind in the world that equals the waste from needless, ill-directed and ineffective motions. When one realizes that in such a trade as bricklaying alone, the motions now adopted after careful study have already cut down the bricklayer's work more than two-thirds, it is possible to realize the amount of energy that is wasted by the workers of this country. * * * By motion study the earning capacity of the workman can surely be more than doubled. Wherever motion study has been applied, the workman's output has been doubled."

This is a fairly representative paragraph from Frank B. Gilbreth's "Motion Study," which is an interesting and instructive treatise on the method of increasing and perfecting the efficiency of the workman through motion economy. The book is the result of years spent by the author in watching and studying the actions of his workmen, their environments, and all the other conditions which help or hinder them in their work. The particular example given by the author is the motions made by a bricklayer in getting a brick from the pile by the tenders to its final resting place in the wall. It was discovered that these motions could be cut down very materially by having the bricks placed in a more convenient position, by an improvement in the scaffold arrangements, and many other time-saving changes, some of which in themselves were very slight but which in the aggregate saved time, motions and fatigue.

Other illustrations are given showing how this underlying principle of motion economics can be applied to other trades and industries, resulting in the workmen's output being doubled. Variables of the worker, under such heads as anatomy, brawn, earning power, experience, fatigue, health, habits, skill, etc., are discussed, as well as the environments of the worker. The manufacturer, the contractor, the business man, even the office assistant will find the subject of motion study or neglected economics a very profitable and interesting one. The D. Van Nostrand Co., New York. Price, $2 net.

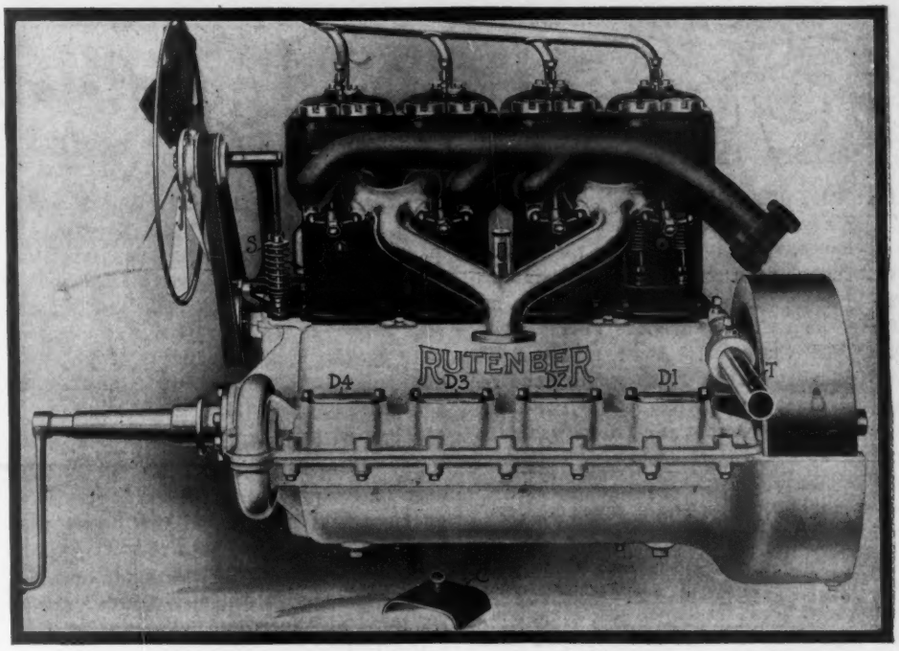


FIG 3—RUTENBER MOTOR, SHOWING NEW SUPPORT

Scientific Factory Management

The book, "Principles of Scientific Management," written by Frederick Winslow Taylor, is destined to attract thoughtful attention from that class of people who have the management of a large body of men. The author takes for his text Theodore Roosevelt's remark that "the conservation of our national resources is only preliminary to the larger question of national efficiency." This scientific system advocated must necessarily have a trained man for a manager, and a manager must be careful in his selection of the man to be trained for a specified work, then so direct the movements that no motion is lost, everything being made to count, even the moments of rest that strength as well as time may be conserved. In this manner, with the trained workman, an increase in the output is inevitable and consequently the employe can be made a high wage-earner, still leaving an increased profit to the employer. In closing, Mr. Taylor summarizes the principles of scientific management as: Science, not rule of thumb; harmony, not discord; cooperation, not individualism; maximum output in place of restricted output; and the development of each man to his greatest efficiency and prosperity. The system is in operation in many companies and must of necessity attract attention in the labor world. There are several examples given where the system has been tried. Published by Harper and Brothers, New York. Price, $1.50.

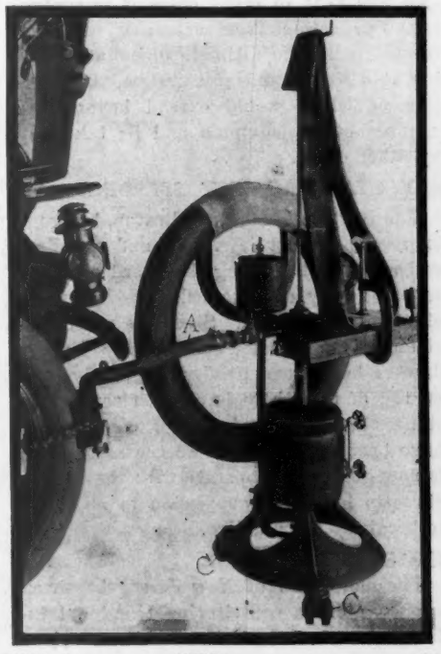


FIG. 4—M. A. C. TIRE VULCANIZER

Footprints of Heine

The lovers of Heine will find in the book, "The Footprints of Heine," pleasant reminiscences of the life, and haunts of the poet. The author, Henry James Forman, says that after 15 years of dreaming he starts out to visit Gottingen and the Harz mountains where Heine lived, studied, and worked. The book is dedicated to William Dean Howells, who first taught the author to love Heine. It is well illustrated and is full of old legends and interesting personal experiences and brings one into quite familiar companionship with the scenes and incidents that inspired the poet's writings. Houghton Mifflin & Co., New York.

Legal Lights and Side Lights

DETROIT REPEALS LAW

TWO weeks of the blue law traffic ordinance, recently passed by the council, was enough for Detroit. The motorists were up in arms, the police were helpless to enforce the radical provisions of the measure, and the courts faced nearly 2,000 complaints, to hear which would have required night sessions for weeks, with the excellent chance that violations would be piling up meanwhile faster than the infractions could be punished. The law was accordingly repealed and a far saner regulation adopted.

The speed limit still is 12 and 15 miles an hour in and out of the mile circle, respectively. It is no longer necessary, however, for a motorist to bring his car to a full stop before crossing a car track. Nor is it necessary for him to stop before passing a street car that is taking on or discharging passengers, provided the street is wide enough to allow him to keep his car at all times 6 feet or more from the street car. In other words, the council gave the police department an ordinance, which, Commissioner Croul says, can be enforced. Motorists in general have been virtually obeying the terms of this ordinance for some time and there is no further dissatisfaction with the ordinance, sensible motorists everywhere realizing that its provisions are now only common sense as applied to the tremendous growth in the number of cars that are being regularly driven on the streets.

The motorists all agree that improved conditions will result from that portion of the new ordinance which compels bicycles and motor cycles to carry lights at night. A large number of the fatal accidents of the past three seasons have been brought about by the failure of the cyclists to protect themselves when riding on the illegal side of the street. The police department promises that the law will be as rigidly enforced in this department as in those provisions applying to motorists. A unique feature of the repeal of the ordinance was the fact that it took place by a unanimous vote.

JAIL FOR JOY-RIDING

Mrs. Ethel Kimball Wilson, of Boston, will spend the next 2 months contemplating what a mistake she made, when, it is alleged, she tried to work the Boston branch of the Oldsmobile company for a couple of joy rides under the guise of being a customer. She went to the salesrooms, and after talking motor cars, said she was desirous of buying one of the six-cylinder cars. She wanted a demonstration, and Manager Houk let her have a car. Off she went to Ferncroft inn at Danvers, 30 miles away. She had picked up some friends, and they had a great time with the car. It is said she tried to pass a worthless check on the proprietor of the inn, but he refused it. The party headed back for Boston and Mrs. Wilson was arrested. In court she was charged with evading a motor car fare of $48, and the judge sentenced her to 2 months in the house of correction.

LID ON IN PHILADELPHIA

Joy riders and reckless chauffeurs have once more proven a thorn in the side of motorists and aroused the ire of the municipal authorities, with the consequent result of causing the speed regulations all over Philadelphia to be enforced more rigidly. The increased vigilance of the police in this respect has prompted the issuance of a warning to members by the Automobile Club of Philadelphia to the effect that "The police now are very active in timing motor cars in the city and drivers are urged to use discretion and to comply with the very liberal and reasonable interpretation of the law enforced by the authorities of this city."

DEVISING HORN SYSTEM

In view of the increased vigilance of the Philadelphia police authorities, the innumerable warning notices sent out by clubs, and the frequent accidents and near-accidents, a movement fostered by the Philadelphia Public Ledger is under way to devise a uniform system of signaling—in other words, to make the use of the horn convey a specific meaning. It is argued that under the existing haphazard method no significance attaches to the toot and that in many cases it is confusing. Suggestions from motorists have been invited, with the ultimate object of arriving at a simple, uniform system, the adoption of which would extend beyond the confines of Philadelphia and be taken up by other cities.

BAY STATE AGAINST SPEEDING

The Bay State A. A., of Boston, has gone on record against joy-riding and speeding, and at its last meeting the board of directors got busy and started a movement to eliminate these evils. Since the recent decision of the supreme court on speed many drivers have been driving recklessly, and on top of this there have been several instances of joy-riding in which valuable cars have been smashed up. So the association is now going to co-operate with the Massachusetts highway commission in an effort to break up the practice.

JERSEY LAW UPHELD

The motor law of New Jersey has been approved of as constitutional and not infringing upon federal law by the court of errors and appeals. The section specifically attacked was that requiring a full license fee from nonresidents.

Frank J. Kane, of New York, driving a car bearing a New York license, deliberately set out to cross the state in order to be arrested. He was arrested and fined.

He appealed to the upper courts. The opinion, written by Chief Justice Gummere, upholds the law in full, holding that such a trip across the state is not interstate commerce. The imposition of a license is rightly within the powers of the state. As the use of the roads by swiftly moving cars tends to destroy them, a fee upon the users is only right to pay for their repair.

LIGHT BILL IS SIGNED

Governor Eugene F. N. Foss of Massachusetts on last Friday signed the bill passed by the Bay State legislature recently compelling all vehicles using the highways at night to carry some sort of a light. The state grange and a number of farmers saw the governor and tried to get him to veto the bill, but he refused, as he is a motorist, and he told them that it was not a hardship, but was sure to minimize the danger for everyone on the roads at night. The highway commission will have the job of looking over the lights and prescribing the ones to be used. Farmers with loads of hay or other inflammable stuff will be exempt. The law will go into effect this fall.

FIGHTING NOISE NUISANCE

The city council of the city of Des Moines, Ia., will at its next meeting pass a special ordinance prohibiting the use of open cutouts on motor cars and motor cycles and compelling the use of the muffler on all motor vehicles within the city limits. The motorists have run wild through the city with the cutout open, disturbing the residential sections, and in the vicinity of the hospitals, and while the offender could be reached by the present ordinances on the charge of disturbing the peace and for disorderly conduct, the council desires to have a special ordinance passed so as to reach the offenders on a specific charge and make it stick.

MAKES NOVEL EXCUSE

The case of a motorist halted and arrested in Fairmount park, Philadelphia, for driving a car without an official license tag thereon brought to light the unique idea of the driver, who had painted the numbers on the front and rear of his car. That pebbles on the roads played tunes on the tin license tags and annoyed him, was the novel explanation for the absence of the tags, but it was not accepted and he was fined.

The Marketing of Commercial Cars

Differences Between Selling Pleasure and Business Motor Vehicles Is Pointed Out by One Who Has Given the Matter Deep Thought—Suggestion Made That a New Organization Is Needed To Handle Power Wagons—Competent Engineer Should Be Included in Staff Because of His Training and Knowledge Which Will Aid the Salesmen Materially

TO sell pleasure cars is one problem; to sell commercial or business cars, such as delivery wagons and trucks, is an entirely different one.

Because of this difference manufacturers entering the commercial car field cannot hope to dispose of their trucks or delivery wagons through the pleasure car selling force. A new organization is needed.

This new organization to sell commercial cars has a three-fold aspect; it involves three predominating factors:

First: The factory administration should assume responsibility for the entire operation or conduct of the sales. This should be done through a qualified business executive.

Second: This business executive should be supported by the services of a competent commercial engineer.

Third: The truck salesman on the firing line should not be depended upon exclusively to make the sales, but regarded more as an aid to the administration, to be utilized by it for personal communication with prospective purchasers.

The coöperation of such a trio, or business team play, will produce the most effective results. The man who has specialized as a competent business executive is rarely conversant with technical matters, nor does he care to act alone in the capacity of salesman except in matured cases.

The engineer in nine cases out of ten will not prove a good business executive or a good salesman.

The salesman, aided by the resourcefulness of the engineer and directed intelligently by the business executive, both of whom can be regarded as partners in the transaction, becomes a very different functionary than when left to act alone and become the victim of change, discouragement and inconsistency.

The business executive determines the general plan of a selling campaign, and decides in advance every important detail of the operation.

The commercial engineer should be familiar with transportation operation and cost under all circumstances; he should keep his technical inclinations well balanced; he should scientifically arrange the advertising arguments; he should analyze conditions of prospective buyers and obtain accurate data on old systems of transportation.

The salesman must be supplied with concrete information and condensed data. He gets into personal contact with the buyer in each case. He must know the truck or delivery wagon features and be conversant with their many details.

PERPLEXITY and difficulty of solution are many of the new administrative problems which appear in the marketing of commercial cars. This is particularly true on account of the transition taking place in the industry, from the manufacture of commercial cars to the production and application of the commercial type of economic service, and administrations are suddenly confronted with the realization of the necessity for entirely different methods of operation, if not a completely different fabric of organization.

The characteristics of the commercial line are in radical contrast with the pleasure car business, the inception and purpose of the one being so different from the other as to render obsolete many of the formulated practices heretofore, in vogue, conspicuous among which is a too complete reliance upon the individualistic function performed by the salesman.

Differences in Salesmanship

It is not the purpose of this paper to advance anything in the nature of destructive policy, but rather to aid administration by the constructive influence of engineering talent in developing a qualified organization, operated by predetermined methods, and supervised by continuous analytical scrutiny to the end that the administration may assume complete responsibility and precise control of every factor contributing to the efficiency of the sales department. This is distinctly a commercial engineering problem, and demands all the functions of an investigating, creative and organizing mind, applied to secure efficiency, or eliminate waste in the intricate commercial mechanism necessary to introduce new and revolutionary devices.

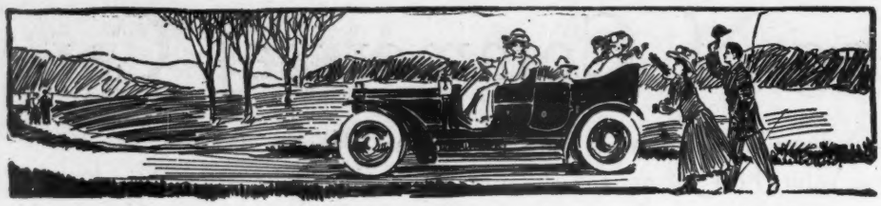
EDITOR'S NOTE—This paper was read before the midsummer session of the Society of Automobile Engineers, Dayton, O., June 14, by William P. Kennedy, member of the society.

How frequently it happens that the responsible and thoughtful executive finds himself brought up short with the blunt fact, after exhaustive effort, that the utilities which he has been traditionally accustomed to employ for the operation of his business are no longer effective! This is usually the case when the functions which are properly those of the executive have, by custom, been delegated to subordinates; and where change in the character of the business finds the subordinate wanting in the resourcefulness which the emergency demands. It requires large mental calibre in such a case to realize that the cause of failure, instead of being charged against the personal equation of the subordinate, is justly chargeable to inefficiency of the administration.

This situation has been prevalent of late in the marketing of commercial cars. The salesman who has hitherto been a dependable utility, of supreme importance, has suddenly descended from his exalted position and is found wanting under the stress of new conditions. A search for substitutes, for better material, hallmarked and guaranteed, brings no satisfactory response, for the reason that the salesman, unaided by the administration through its organization, can no longer render the independent service which former conditions permitted.

Advertising Changes

The same is certainly true, although not so conspicuous, with regard to the department of advertising; here frivolity, caprice and the artistic cease to hold sway; their sublety fails, and in the cruel, freezing atmosphere of business common



sense they become not only impotent, but ridiculous. The magic art of the advertiser is gone, his charm has faded, and while his preliminary play in the new field may be brilliant and sparkling, the continuity of his effort soon disappears, or exposes a monotony which characterizes its futility.

The causes and cures for these difficulties have been vaguely diagnosed in the majority of cases, and intelligently analyzed, prescribed for and remedied in others. A rational investigation will prove that the introduction of any novel business utility, of an economic character, calls for genius of a high order. If the utility proposes to supersede some established practice with expense reduction, it falls for the faculty of comparative analysis, which is at least uncommon. If the utility, furthermore, is an article of machinery, mechanical talent, if not engineering ability, is a valuable necessity. To expect the type of salesman usually employed in the pleasure car field to step into the breach and independently effect the introduction of commercial cars is at least unreasonable; and the continuance of this fallacious practice has led to much disappointment, if not financial loss.

There is no question that a great number of cars can be sold during the preliminary stages of the industry without any particular effort, but such sales are largely based on the speculation of the purchaser and offer no fundamental security to progressive continuance, particularly in quantity sales, which is the real anxiety of the manufacturer with large permanent investment at stake. It is this false evidence of sales, apparently due to the salesman's unaided efforts, which has led otherwise well prepared executives to procrastinate in matters of basing their sales organization upon correct fundamental principles.

To look the problem squarely in the face, there is no marked difference between the installation of a multiple-unit power plant for city merchandise transportation and the installation of a stationary power plant for any other purpose. It calls for the same scientific training and rare quality of judgment; the employment of a novice for such an undertaking is as criminally uneconomic in one case as the other. The application of machinery to merchandise delivery purposes calls for an accurate knowledge of the work to be performed, an intimate familiarity with the capabilities of the machine and sound judgment in the method of its application. This simply means that the functions of the engineer in the development of this class of machinery are not completed until each machine is properly selected and properly applied to work within its capacity at the practicable maximum of efficiency.

The Question to Solve

The question at present before the administration of many large truck manufacturing concerns is, how can they so constitute that department of their organization devoted to sales as to handle the variety of conflicting problems which are certain to come with the development of the business, and which are of more critical importance in initial undertakings? In determining upon the solution of this question, three prominent factors suggest themselves for combination in the proper manipulation of such a department: First, the administration, through a properly qualified business executive, should assume responsibility for the entire operation and conduct of sales; second, that this executive should be supported by the services of a competent commercial engineer; third, that the salesmen on the firing line should not be depended upon exclusively to make sales, but should be regarded more particularly as an aid to the administration, to be utilized by it for personal communication with prospective purchasers. Correspondence, literature and advertising are simply auxiliary stimulants.

The Engineer's Role

It will unquestionably be recognized that the activities of such a working trio provide opportunity for the most efficient team play, and for a coöperation of varied ability, which is certain to produce effective results. The man who has specialized as a competent business executive is not likely to be very conversant with technical matters, or to desire acting alone in the capacity of salesman, except in those matured cases where the critical necessity for securing the business demands the influence of his executive ability. The engineer is likely to prove neither a good salesman nor a satisfactory executive; yet upon him will devolve the entire burden of producing the diversified ammunition to be made effective in the hands of both the executive and the salesman. The salesman, aided by the resourcefulness of the engineer, and directed intelligently by the executive, both of whom he can regard as his partners in each of his transactions, becomes a very different functionary than when left to act alone and become largely the victim of chance, discouragement and inconsistency.

This plan of action places responsibility upon the management for the success of every operation, and incidentally the efficiency of subordinates. Instead of entire reliance and dependence being placed upon a corps of disconcerted salesmen for the success of the enterprise, they become of secondary importance and can be dispensed with or replaced without the disorganization, demoralization or loss of investment in their special education, usually incident to such changes. Operating over a large territory, there is the advantage of having the expensive talent concentrated at headquarters, and readily available to any particular district, bringing to bear on each case the accumulated experience gained over the entire field.

The Business Executive

The particular responsibility of the executive, aided by the engineer, will be to determine upon the general plan of campaign, and of deciding in advance upon the execution of every important detail of operation under the best possible conditions. This necessarily calls for providing the organization with equipment to effect this purpose, as well as a code of instruction for the performance of each section of the department, which will effect a true co-relation of reciprocal effort. Nothing will so much insure success as universal preparedness, not only in the predetermination of each move in the cycle of sales operation, but of advance provision in literature, documents and form correspondence to cope with any contingency likely to arise. The same holds true of the periodic advertising and circularization. No campaign should be undertaken in this direction without the entire series of material being on hand at the start, with means provided for supervision and the checking of results over the predetermined schedule of issuance or publication.

It will further devolve upon the executive to keep under observation and record the performance of each of the practices which he puts into effect, modifying or augmenting his original instructions as intelligent study of each case may demand. The same scrutiny should be extended to the performance of individuals under his direction, as well as the results, direct or indirect, obtained from their efforts. This application of his executive attention to the details will not only elevate the entire organization into useful activity, but will develop the particular qualifications and general efficiency of the personnel under his command.

Commercial Engineer Requirements

The duties of the commercial engineer will be to practically perform all the detail and routine required to keep the executive operating at his highest efficiency.

This will call for qualifications not usually manifest in engineers devoting themselves to machine design and construction. He should keep his technical inclinations well balanced by a broad knowledge of the application of business principles and commercial practices. He should be conversant with transportation operation and cost under all circumstances, and should acquire those habits of mind which will enable him to regard mechanical equipment from the standpoint of ownership. His aid in the preparation of effective literature requires not so much a high degree of literary ability as a concentrated effort in the direction of producing reasonable contrasts between the advantage of the new equipment to be installed as against the equipment which it supersedes. He must posses that educational faculty which can present in plain language the critical conceptions which he desires to impart, and should so scientifically compose the material for advertising as will make evident mature judgment in the control of tnis powerful engine of commercial force in the conduct and expansion of his business. It is in tne province of efficiently utilizing the complete energy of this latter industrial device to perform its psychological function that the analytical mind of the engineer should predominate.

It requires no deep process of thought to discover the humbug which parades as genius in this department of the merchandising art, and the ruthless extravagance which its elusive subtleties foster and preserve should stimulate the inherent instinct of the engineer for definite precision and concrete result.

The principal duty of the engineer will be to carefully analyze the conditions prevailing in those cases where it is desired to introduce machine equipment for transportation, and among the first provisions in making these investigations should be to verify the resulting figures by the responsible representative of the prospective purchaser. This will insure that correct information is being used as a foundation for comparison, and that there will be no subsequent contradication or distortion of fact to defeat a presentation of economical substitution. There is a marked advantage in possessing this authenticated information, since it insures to tne investigator a definite basis for demonstrating economy. An analytical study of the work to be done, or how it is at present performed, will often afford a great advantage over the purchaser who is not usually qualified to critically examine his own operating conditions.

Engineer Assists Salesmen

It should be a fundamental purpose of the engineer to provide his coöperating salesmen with serviceable information of a bookkeeping or monetary character entirely devoid of technicalities, with perhaps the exception of performance data and, in fact, his presence in any sale

transaction should be a guarantee to the censorship or complete suppression of technical discussion. By insuring this, his cooperators will be unrestricted in the exercise of their complete ability to negotiate the business, and in terms which are completely understood both by themselves and the intending purchaser. In generally seeking for stimulating means to promote business, the engineer should be ever on the alert to utilize to advantage those methods which have been effective in other organizations engaged in the introduction of industrial apparatus.

Functions of Salesman

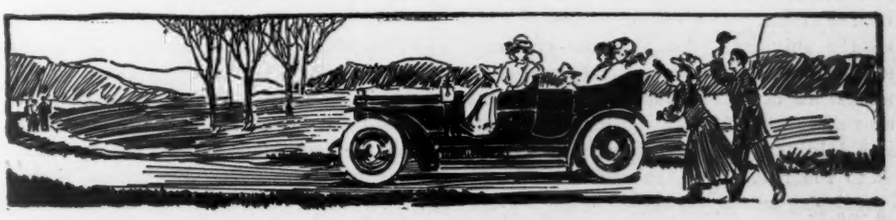
Aside from the ordinary essential qualifications of the salesman, his success as a working unit of the prescribed system will depend largely upon the extent to which he can be effectively made use of as the connecting link between the organization and the purchaser. That he must be supplied with concrete information and condensed data goes without saying. Complete and instantaneous responses to inquiries render him invulnerable and create a confidence in his ability to command his position. He should be systematically advised of the progress in sales which his department makes, as well as advertising issued, and should act as an emissary to secure information of the effect created by correspondence, circular distribution and other means of communication of which he may not be a part. He should be particularly serviceable in getting into personal contact with the party in each case who is certain to have the purchasing power, and should be adept in learning whether there exists the disposition or the ability to make the purchase desired. Advance information of this character is of great value as insurance against special expenditure made for effecting any particular sale.

In order that proper decision and decisive perseverance may be exercised, the salesmen must constantly collect data as to the tendencies of their prospects, their methods as regards purchases, the peculiarities of their organization, the repective influences of each of their executives and the general difficulties peculiar to their business. There should be constant and complete communication between himself and his organization, so that he may be assisted as well as assist in the conduct of every prospective sale.

In presenting his case to new prospects he should create the impression that he is a solid, intelligent man, with plenty of energy and perseverance and well versed in the purposes of his mission. Perseverance in the direction of convincing the purchaser of the utility and economy of the machine he has to sell, without introducing technical discussions or invidious contrasts with the products of others, is an art very rare and very valuable. The educational ability to make his prospects realize the advantage to be gained and the progress made by the use of his device can be cultivated with reasonable practice; an aid to this purpose is the reading of current literature on transportation, now so prevalent, and directing the same to the attention of his prospects. Digesting current advertising, assimilating arguments and collecting facts for skillful use in the manipulation of intelligent, agreeable discussion is often a valuable accessory. It should be his purpose in these discussions to leave something to the imagination of the purchaser, so as to develop expression of his views and thus insure a better conception of his particular habits of mind, to more completely master his case. Concentration upon the ultimate purpose of the interview and a vigorous personal selling effort are more likely to be productive of the desired result than any discussion of strictly irrelevant matter, unless the latter is resorted to as a necessary link to secure a subsequent interview.

Joint Salesmanship Work

As stated in the earlier part of this paper, the salesman should not be altogether depended upon to secure the business or close the sale. He should be aided occasionally by the personal presence of the executive or the engineer, who may be able to more completely and correctly diagnose the case at a single interview. In developing quantity installation business, which is unquestionably the most desirable, it should be borne in mind that the purchaser is usually represented by the best brains which his organization can provide. The ordinary purchasing agent and even minor executives are eliminated, and business must be negotiated with the active head of the institution. Few salesmen acting alone can cope with a situation of this kind, and it calls for the concerted action and presence of the executive, the engineer and the salesman. The strategic advantage of this conference method of handling large business prospects is too



evident to require comment. Perfect team play, with each member performing his respective function, will bring about quick decisions and a progressive business.

Discussion on Paper

Following the reading of W. P. Kennedy's paper was an interesting discussion on the topics suggested.

Arthur J. Slade said: "A class of commercial or industrial engineers must be developed, and where the services of the engineer have been employed in order to obtain the vehicles most adaptable to the service for which they were intended, original installations have been most satisfactory. It was not believed, however, that salesmen with limited technical knowledge could pave the way, so to speak, to the engineer; and it was suggested that student courses for salesmen were quite essential."

In reply to a request for his views, H. F. Donaldson, editor of the Commercial Vehicle, said: "The truck salesman must sell transportation; and in order to do this, he must know something of the conditions under which the truck must work, and have some technical knowledge of the product which he is trying to sell in order that he may urge the purchase of the type most adaptable to the service required. A wise course would be to follow the examples of the railroads and other established service companies in this respect. The field is a very broad one; and too many think that the place for the engineer is in the shop when the field engineer is indispensable."

D. F. Graham said: "Mr. Kennedy has struck the keynote of the situation. The commercial vehicle must be installed with conscientious technical consideration of the working requirements. A truck good in Boston, might be a failure in Cincinnati or Pittsburg, owing to the evenness of the former, and the hilly conditions of the latter. Road conditions are a most important factor, and few if any designs are adaptable to all territorial conditions. With the industrial engineer in close touch with the factory and sales forces, the efficiency of the organization is greatly increasd."

The necessity of keeping in close touch with the user of the truck was emphasized by F. E. Moskovics; and he cited an example where the reinstallation of several vehicles of one of the best makes of motor trucks was lost to the manufacturers, because of inattention to recurrent trouble which was due to overloading of the truck and not an error in design. The case cited was that of a large truck which had been overloaded to such an extent that a permanent set of 2 inches was suffered by the frame. This caused excessive wear on the universal joint near the transmission and necessitated three or four replacements, all of which were supplied to the user of the truck after considerable delay, and duly charged without ever an inquiry as to the reason for the replacements, or the display of any interest in the service that was not being obtained by the owner of the truck.

Being in the employ of a large railroad, Mr. Buckwalter ventured to state that eventual developments would see the final use of the truck, that of transferring goods from the freight stations to the business houses; and that as yet the design of the truck was hardly ready for such service. The design of vehicles for such purposes will be influenced by the railroads; and must be simplified so as to be operated by ignorant drivers. Standardization of control levers also is quite essential.

In answer to the comments on his paper, Mr. Kennedy gave one or two reasons why salesmen should not be educated in mechanical details, and added several suggestions on other points touched upon in the discussion. One reason for the desired ignorance of the salesman in regard to mechanical detail was, that it often tempted him to lead the prospective buyer beyond the depth of his comprehension, and caused the salesman to talk disadvantageously on mechanical advantages when he should be expounding on the adaptability of the mechanism as a unit to the service for which it is intended. The purchaser uses the salesman for his own education and is inclined to listen long for his own personal benefit rather than because of any great interest in the product handled by the salesman. The origin of the system on which the paper was based was not claimed by Mr. Kennedy. "It is not new," he said, "but now in use by practically all large manufacturers of industrial apparatus; the paper might better have been entitled 'Scientific Management of the Sale of Trucks.'" In closing, the following points were emphasized: Trucks generally were designed in small places where proper conditions are not. Chief engineers should not be confined to the factory. Designing should be done by conference method, so that inefficiency of one department is brought out by others. Quantity installations are beneficial in showing up inefficiency or weaknesses. Executives should give more attention to the sales force.

Manufacturers'

THE MATTER OF BEARINGS

PHILADELPHIA, Pa.—Editor Motor Age—The over all length of a plain bearing car engine crankshaft is determined by the necessity of providing sufficient area for the main and crankpin bearings; especially the former. As this length is in excess of the requirements of the cylinders, the over all length of the whole engine is that of the crankshaft. By using annular ball bearings on the main journals the shaft length can be considerably reduced, and this is one of the leading arguments in favor of the use of ball bearings at these points.

The first ball-bearing designs for four-cylinder crankshafts used three bearings. This introduced awkward complications, owing to the difficulty of threading the intermediate bearing over the crankshaft webs, and it necessitated the intermediate bearing being of extraordinary size. For this reason in moderate sized engines the two-bearing design has recently come into favor. With two instead of three bearings the shaft can be slightly shortened, and as the second and third crankpins are not separated by crankwebs and a journal, the natural stiffness of the shaft is increased. If necessary the shaft may be still further stiffened by increasing its diameter, and this, in fact, is quite essential, since the ball bearings do not, like plain bearings, tend partially to hold the shaft rigid against bending.

The accompanying illustration shows a standard form of mounting recommended by our company. The shaft is restrained endwise by the forward bearing, whose inner race R is a light press fit on the shaft, and is clamped fast by the nut and wire locking ring shown. The outer race R1 is a sucking fit in its housing, and has a slight endwise freedom to ensure against its being too rigidly held endwise.

The rear bearing is a light press fit on the flywheel hub, and the spacing ring between the hub and the adjacent crank web bears against the inner race of the bearing, but not against the hub H itself. Consequently, when the nut M is drawn up, both the inner race S and the hub H are clamped fast. The outer race S1 is a sucking fit, but is not restrained endwise. This bearing is larger than the front bearing, partly to accommodate the flywheel hub, and partly to carry the extra load imposed by the flywheel.

As ball bearings, unlike plain bearings, do not wear out of line, the devices for preventing oil leakage at the end of the shaft can be far more effective than where plain bearings are used. The closures shown are our form. The lips L, which must be at least $\frac{3}{32}$ inches wide, have sharp edges, and are bored 1-64 inch larger than the shaft or flywheel hub. The inside lip in each case has a drain hole at the bottom to return oil which works past it. As the front bearing is more exposed to dust than the rear bearing, the design might be improved by employing two grooves and three lips. In that case the inner lip would remain as the drawing shows, and the other two would prevent the entry of dust, owing to the dust and creeping oil forming a natural closure between the lips and the shaft.—Hess-Bright Mfg. Co., H. L. Towle.

Communications

QUITS DIRT TRACK RACING

Detroit, Mich.—Editor Motor Age—Lozier cars will, in the future, take no part in races or contests on dirt tracks or horse tracks of any character, unless they have been rebuilt and remodeled for the express purpose of motor car racing and shall have received the approval of the proper A. A. A. committee. The Lozier company has been a consistent advocate of racing with stock cars and has announced the intention of continuing competitions in principal events of the year, but in the future an effort will be made to limit these contests to specially-built speedways or tracks remodeled for motor racing or on properly guarded road racing circuits.

That grave danger attends racing on horse tracks or unsuitable road courses has been demonstrated so clearly that there can be no excuse for encouraging contests of this kind in the future. This does not mean that horse tracks cannot be made safe, but dirt surface should be replaced by cement, wood or brick, the high death-dealing fences should be replaced by low, stout guard rails on the outer edge of the track, and the inner side of the track should be made smooth and hard, so that the cars leaving the track on the inside could continue on indefinitely rather than become mired in soft dirt or sand, or strike open ditches or other obstructions which result in the overturning of a car.

If races are confined to specially licensed speedways, such as Atlanta, Los Angeles and Indianapolis, or to road courses, like Savannah, Elgin, Fairmount park and Santa Monica, where crowds are kept well away from the course and military or police protection is provided, it may result in reducing the number of racing events held throughout the country, but it would at the same time encourage those who have invested large sums in building safe tracks, to take every further precaution necessary to avoid accidents and receive the reward which should come to them by concentrating the patronage of contestants and the public to those tracks or courses.

It is useless to contend that there is no danger attendant upon driving motor cars at high speed, but it is a phase of human nature to brave danger and to take chances, and the chances of accident to a driver of a first-class car at high speed on a motor speedway are much less than the chances which thousands of motorists take everyday in driving their cars along the country roads of America.

If other manufacturers who believe in the value of racing and lessons they teach to their engineering forces and who are supporters of honest motor car racing, will unite with the Lozier Motor Co. in refusing to compete on unsafe tracks, it will result in a cessation of the unjust assertions that racing as a sport is unusually hazardous or dangerous.—Lozier Motor Co., C. A. Emise.

RUSHMORE WINS LAMP SUIT

New York, June 20—A decree was handed down today allowing the Rushmore Dynamo Works to enter a decree for injunction and accounting with costs against the Badger Brass Mfg. Co. of New York for the latter company selling lamps which were an imitation of the Rushmore lamp. The case came up before the circuit court of the United States in the southern district of New York. The decree for injunction was allowed because the court held that the defendant had combined in his lamp the elements that gave the Rushmore lamp its distinctive appearance, although several of said elements were not necessary in the manufacture of the Rushmore lamp. The court held that Rushmore had not any right to a monopoly of the words "flare front," but held that so great was the similitude between the defendant's lamp and that of the Rushmore that buyers might be deceived without any further misrepresentations.

It is not known yet whether the Badger Brass Mfg. Co. of New York will carry the case to the supreme court or not.

In reviewing the case the court expressed itself as follows on the situation:

The bill alleged unfair competition in trade and the questions involved are practically the same as those before the circuit court of appeals in Rushmore vs. Manhattan Screw and Stamping Works; and Rushmore vs. Saxon, in which cases the court held that Rushmore adopted a design for the shell of his motor car lamp which was pleasing to the eye and of a high grade quality, without there, however, being anything strikingly novel or ornamental about it, that it was adopted to differentiate his lamp from those of other makers and that he was entitled to protection from unfair use by competitors and from such stimulation as would enable palming off on a customer another lamp for that of Rushmore manufacture, even though a patent had not been granted to him for his design or adaptation.

The feature of the so-called flare front the circuit court of appeals held did not exclusively belong to Rushmore and that a monopoly could not be given him for the use of the words flare front. Such a decision is binding on this court and is declaratory of the law applicable to the facts under consideration.

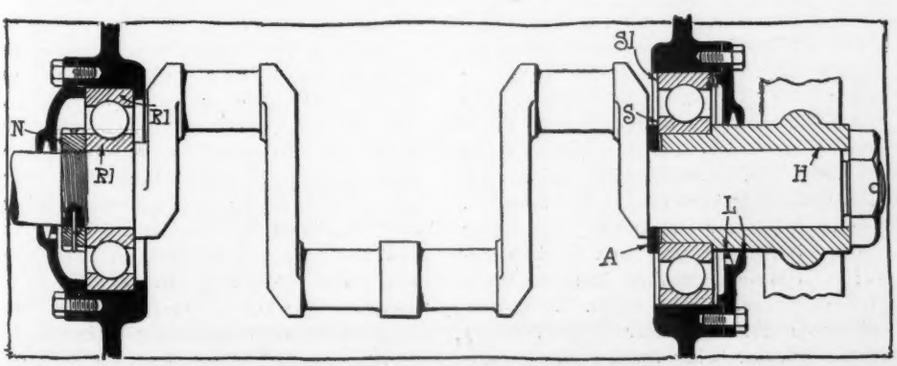
The record establishes that Rushmore was the first to adopt the lamp design in question and to combine in a cylindrical shell of polished brass the elements of an unusual form of front door and rounded rear cover and a ventilator hood. No claim of unfair competition is made because of the flare front element of the defendant's lamp or the words used in connection with its sale; it is contended, however, that the defendant's lamp, irrespective of the flare front, is an imitation of the shape and outlines of the Rushmore lamp and that the precise elements are used in combination by the defendant in its lamp that are contained in the Rushmore lamp and that give it an attractive and conspicuous appearance. It is shown that the elements which make the Rushmore shell distinctive in appearance are not necessary in the construction of the lamp. Many different designs could have been used by the defendant without interference with the rights of Rushmore, but the defendant instead of using such designs or adaptations appropriated the design of the complainant.

The so-called Badger lamps are in appearance identical with the Rushmore lamp and their similitude to such lamp is so close as to make it probable in my judgment that buyers may be deceived into believing that they are buying Rushmore lamps without any misrepresentation. Such deception is not improbable from the fact that the Badger lamps have the characteristically rounded shape, design, color and nonessentials of the Rushmore lamps. The trade name Solar on the defendant's lamp can not be considered as extenuating the imitation.

The complainant has given testimony tending to show that there was an actual palming off by the defendant of its lamp for that of the Rushmore, and though in my opinion such evidence does not completely establish such claim, yet from it the inference may be drawn that there is probability of deception by the marked similitude of appearance and a presumption arises that the imitation was intentional.

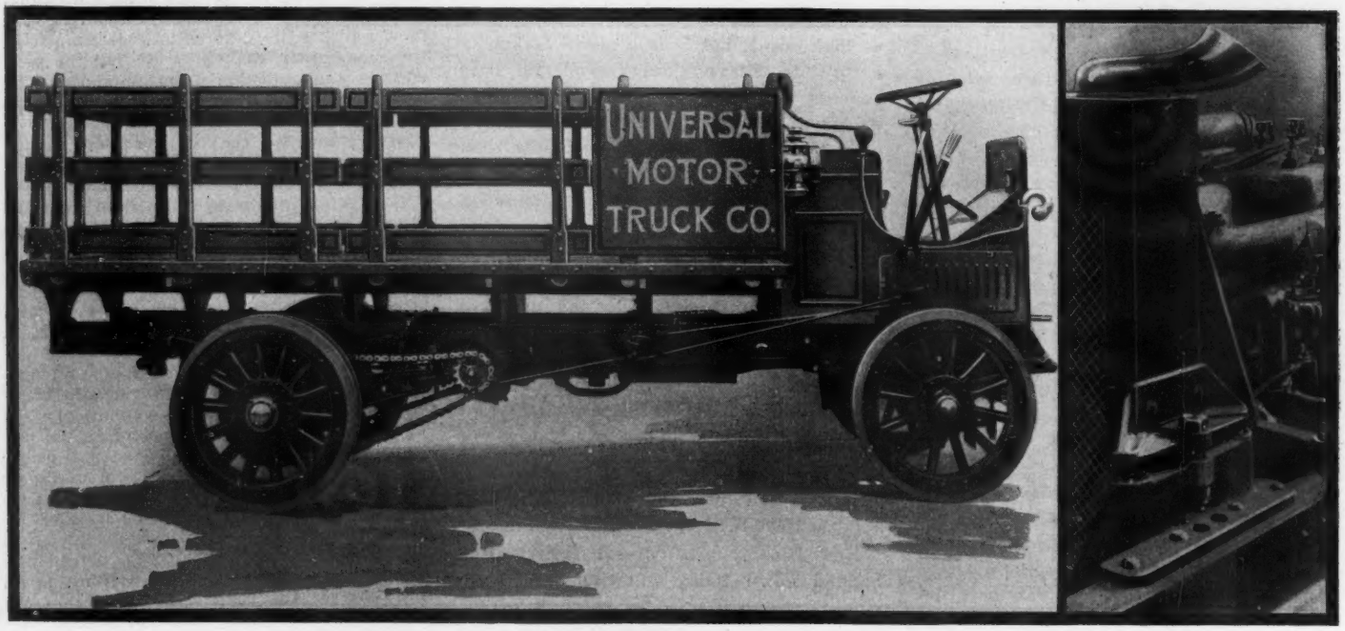
The defendant places reliance on the appearance of prior lamps with flaring fronts and upon separate elements found in different prior lamps as anticipatory of complainant adaptation but such elements as already indicated have been combined by Rushmore in a new design to give his lamp a distinctive appearance and I am in accord with the view expressed in the prior adjudications wherein the Rushmore lamp was involved that in this effort he succeeded. The defendant has given the interior of his lamp a whiter appearance than the Rushmore but has not succeeded in making the lamp look different from the Rushmore.

A decree for complainant for injunction and accounting may be entered with costs.



STANDARD FORM OF MOUNTING HESS-BRIGHT BEARINGS

A New Two-Unit Heavy Truck Design

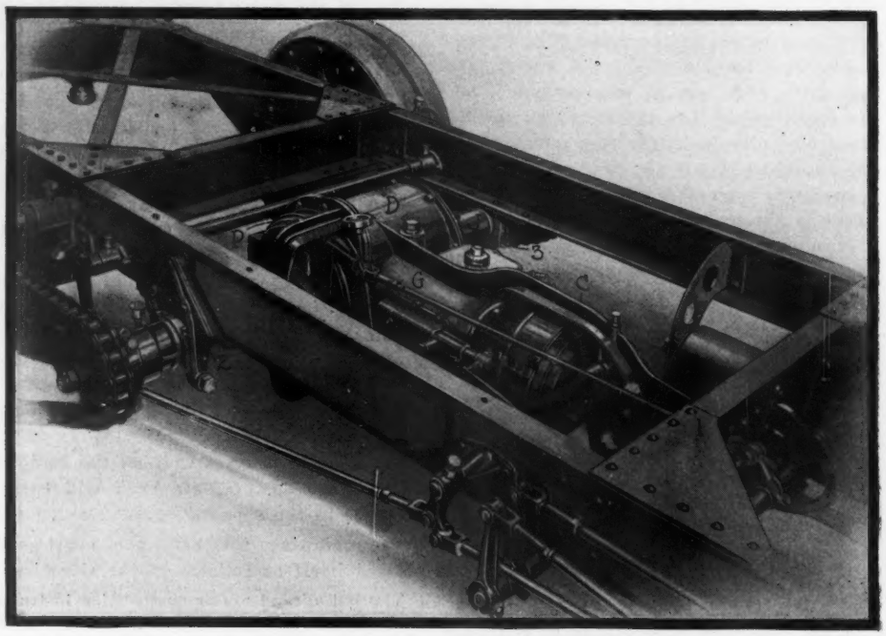


UNIVERSAL 3-TON TRUCK AND RADIATOR METHOD OF SUPPORT

A NEW Detroit truck is the Universal, a 3-ton type which has gone through the process of development in testing for the last year and now is ready for the market. It is the product of the Universal Motor Truck Co., an organization of Detroit people with the majority of the stock owned in that city. The company has built a four-story factory of steel and concrete construction on the lines of the Grand Trunk railroad, between Farnsworth and Theodore streets. This factory has been fitted with machinery and the trucks are being turned out therefrom.

The Universal truck is of the two-unit type, both of which units are carried at three points, giving a flexible mounting intended to relieve the motor and other bearings of strain, and any one of the four wheels when it drops into a rut or rises over another. The first unit is the motor supported direct from the frame at three points. A forward support is an I-beam cross member A extending from one side of the frame member to the other and supporting the front of the engine pivotally at the point 1. The rear support is a similar cross member B which is rigid with the crankcase. This gives two points of support, 2 on the right side and 3, hidden in the illustration, on the left side.

The second unit is made up of the jackshaft J, gearbox G, differential D, and multiple-disk clutch C, to which could be added the service brake F. This unit also is supported at three points. There is a single point of support, 1, at the front end taken on a cross member of the frame; and supports 2 and 3 where the jackshaft is carried on brackets to the frame. This complete unit can be dropped out of position by the removal of three bolts.



GEARBOX AND JACKSHAFT UNIT OF UNIVERSAL TRUCK

The apparent reason for two-unit, three-point construction is accessibility and demountability. If trouble is found with the motor it can be readily removed. If the trouble is with any part of the transmission system the transmission unit made up of the clutch, gearbox, differential, jack shaft and emergency brake can be removed. The manufacturer claims that by placing the multiple-disk clutch back of the gearbox it is more accessible than if located in the flywheel of the motor. Removing the clutch from the motor flywheel allows of the flywheel being formed into a peripheral fan which assists in the cooling.

The Universal truck has been designed to give as much load-carrying space as possible with a limited wheelbase, and so give as small turning radius as possible. Although designed for 3-ton loads, it is made with two lengths of wheelbase, one 132 inches, the other 150 inches, the shorter one is intended for concerns transporting heavy merchandise, whereas the latter is fitted for light and bulky freight. On the truck with 132-inch wheelbase there is a load-carrying space of 12 feet, 4 inches, but an option is given on a body with a load-carrying space of 14 feet from the back of the seat to the tail board. On the truck

with 150-inch wheelbase the standard length of the load platform is 15 feet, 6 inches, but an option is given on a 17-foot, 8-inch length. On all models the tires are 36 by 5 single solids in front and 36 by 4-inch dual solids in rear.

In order that the truck may be protected in the matter of speed a governor arrangement is fitted limiting the speed to 12 miles per hour. This governor is a centrifugal weight type carried in a compartment integral with the motor.

The motor employed is a conventional four-cylinder type, with 4-inch bore and 5½-inch stroke, which gives a formula rating of 25.6-horsepower. It is made with cylinders having opposite valves; pistons 4⅞ inches long; connecting rods are 11¾ inches from center to center; crankshaft bearings are as follows: Front, 4 inches by 1¾; center, 3¼ by 1¾; rear, 4½ by 2 inches, the lower connecting bearings are 2¾ inches long and 1¾ inches in diameter. Ignition is by Bosch dual type, a Schebler carbureter is fitted, lubrication is by the splash system fed by a plunger pump, and has a standard cooling system, with the radiator carried in front, supported through spiral springs at each side and protected against damage by collision by a cross member of the frame which is positioned well in advance.

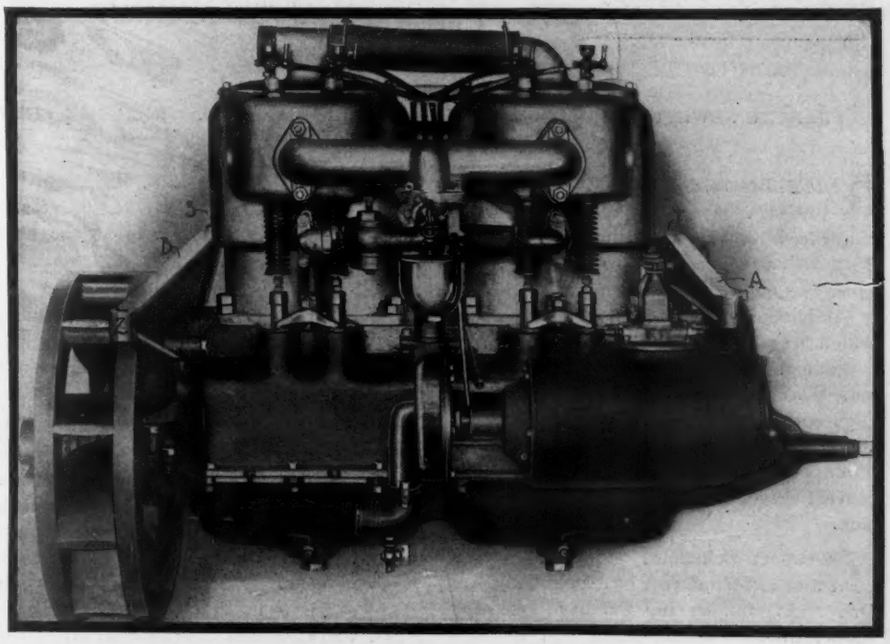
In the second unit the multiple-disk clutch is of conventional design, the gearset is a two-speed type, the differential is a spur gear one.

The entire body, power and transmission plant are carried on channel frame construction, channel weighing 10½ pounds to the foot with a vertical depth of 6 inches. These frame side members are straight from front to rear and 38 inches apart. The framework is carried on semi-elliptic vanadium steel springs. The front set 48 inches in length, the rear set 52 inches long, and the leaves in both 3 inches wide. This construction gives the load-carrying platform a height of 33 inches without load, and 30 inches with a load. The front axle is an I-beam construction; the rear axle a rectangular design. Power transmission from the jackshaft is by chain to the rear wheels. The jackshaft sprocket having 16 teeth, the rear wheel sprockets 45 teeth. Adjustment of the chain is through heavy radius rods with universal movement at the forward end. There are three brakes. The service brake is a band type on the differential.

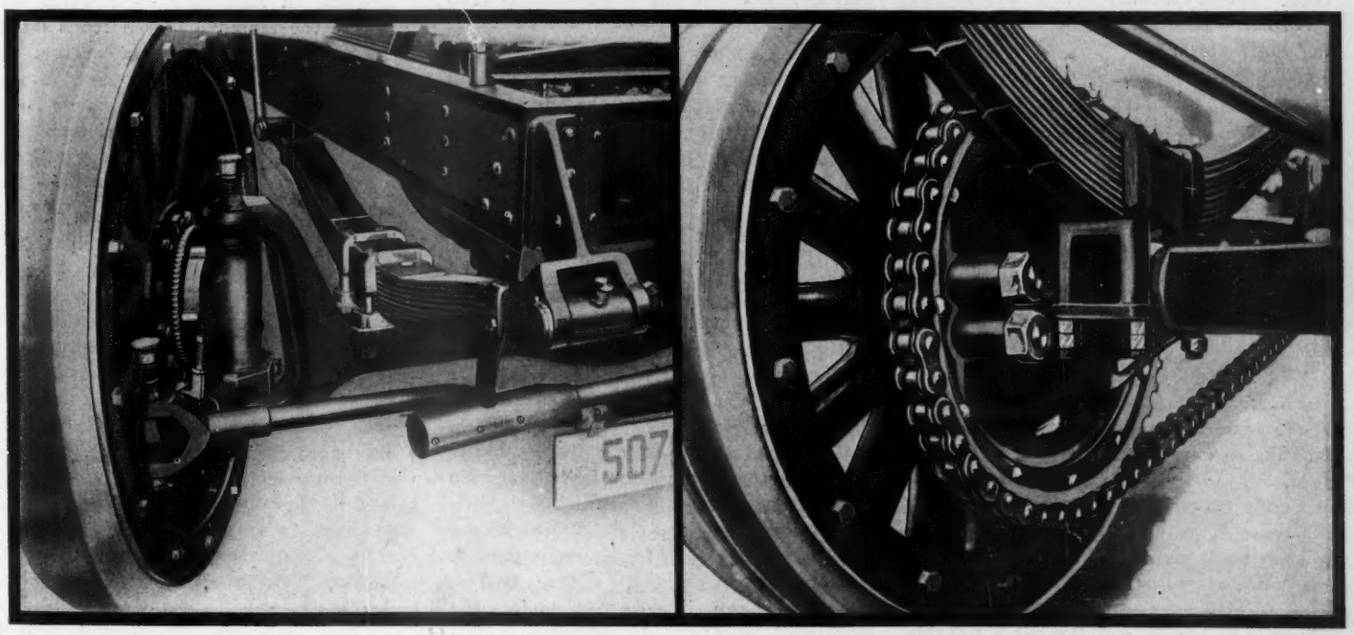
ATLANTA'S QUANDARY

The work of solving by the gasoline system the municipal hauling problem of the city of Atlanta, Ga., goes on apace. Motor fire wagons, patrol wagons and ambulances are to be followed soon by a municipal garbage wagon. The council already has appropriated $5,000 for the purpose of buying a gasoline garbage conveyor. This wagon is hailed as the machine to solve a terrific municipal tangle. The local incinerating plant was worked to a white heat in a fruitless effort to destroy Atlanta's garbage. Finally, when it gave up in disgust, it became necessary to dump the garbage in places on the city's edge. This bred flies, smells and a horriferous kick from people and press.

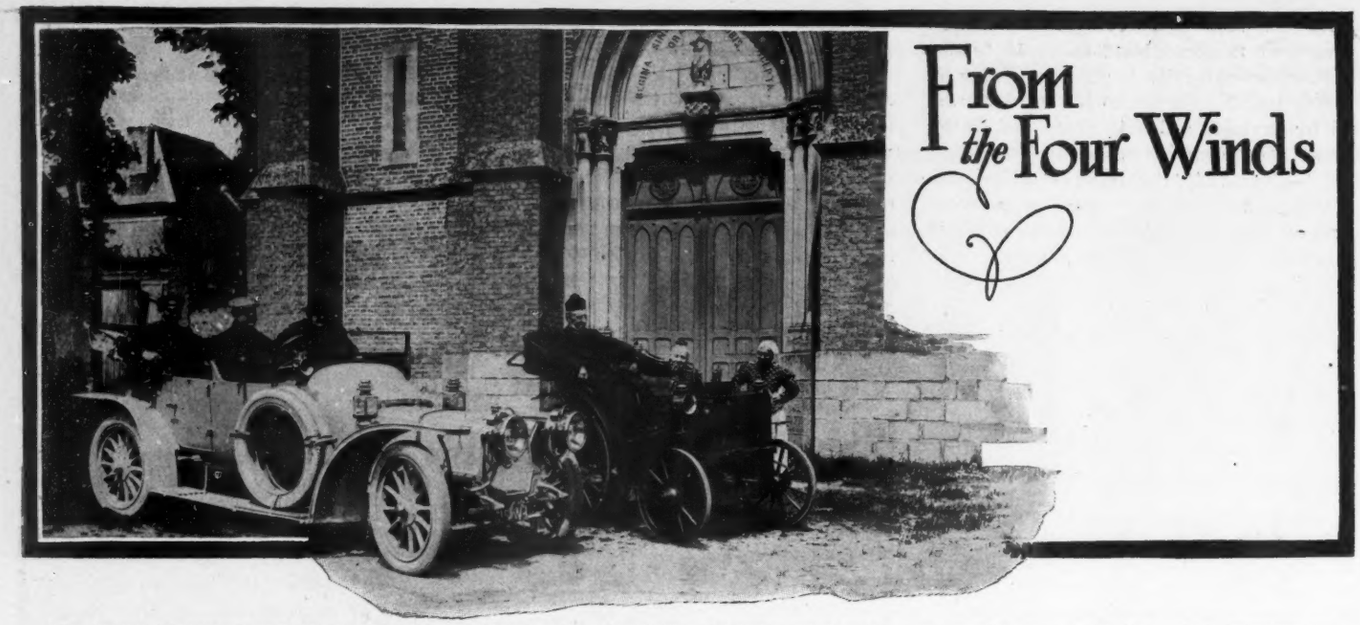
In disgust the council appropriated money for a garbage wagon, which will convey the unsavory mess collected by the small mule-drawn sanitary wagons from the city to the remote dumping grounds outside of the city limits.



MOTOR USED ON UNIVERSAL 3-TON TRUCK



STEERING CONSTRUCTION DETAILS AND REAR WHEEL DESIGN ON UNIVERSAL TRUCK



FRANCE'S NEWEST AND OLDEST, RUNABOUT BEING PANHARD, WHICH HAS BEEN IN SERVICE 17 YEARS, AND WHICH IS STILL RUNNING, BEING OWNED BY A PRIEST

REMY Brassard Up Again—The Remy brassard is to be contested for at the races on the Brighton Beach track, July 3 and 4, according to word sent out from the offices of the Remy Electric Co., of Anderson, Ind., the founder of the prize, which was put up last year.

Calumet Club's Reliability—The Calumet Motor Club, of Roseland, Ill., a Chicago suburb, held a reliability run to Laporte, Ind., and return last Thursday. Twenty-one cars started and fifteen made perfect scores under the grade 3 classification.

Davenport Schedules Meet — A track meet and hill-climb will be staged July 4 at Davenport, Ia., by the Tri-city Speedway Association. The hill-climb will be held in the forenoon and the races in the afternoon. Seven different events will be run, the 25-mile race for a $300 cash prize being the feature.

Catch Car Thieves—Through the efforts of Indianapolis police, W. T. Erdman and S. F. Foresman have been arrested at Edwardsville, Ill., for the theft of two cars, which they have confessed taking. They first took a car belonging to Dr. J. P. Christie, which later was found at Staunton, Va. They then took a Packard belonging to A. W. Markham of the Mais Motor Truck Co., which was found at Edwardsville.

Will Extend Famous Road—The river-to-river road of Iowa, of which Davenport is the eastern terminus, is to be extended into the western country as far as Denver, Colo. Citizens of the various cities along the main traveled road west from Omaha, the present western terminal of the river-to-river road, realizing that a great deal of the motor travel can be turned their way, have formed an association the object of which is to finance and lay out a suitable motor highway all the way from Omaha to the Colorado capital. D. B. Davidson, formerly of Davenport, Iowa, and interested in the river-to-river road, is at the head of the new project.

Will Race on Beach—Motor races will be held at Gearhart Beach, Ore., during the Astoria centennial, and will be held under the auspices of the Portland Automobile Club. The dates announced are August 10, 12 and 13. Races were held there last year.

Show Billed at Des Moines—Entries for the show which is to be held in Des Moines in connection with the Iowa state fair, are beginning to pour in. Last year the show was conducted by Minneapolis parties and this year it is in charge of W. E. Moyer, C. G. VanVliet and George Harritt, of Des Moines. The home control is proving popular and the affair will be much larger than last year.

Virginia's Showing—Reports from Virginia show that so far this year 2,988 cars have been registered in the state; that there are sixty-seven licensed dealers and 442 chauffeurs. The total revenue from these sources for the past year is $50,894, all of which will be spent on roads. Virginia now charges on a horsepower basis—$5 for less than 20 horsepower, $10 for from 20 to 45, and $20 over that.

Outing at Louisville—Nearly 250 men and women assembled Saturday afternoon on the banks of Harrod's creek, 11 miles from Louisville, Ky., for the annual fish fry of the Louisville Automobile Club. Sixty-five cars carried the members and friends of the organization from Louisville to the scene of the big fest. Rush C. Watkins, president of the club, carried Mayor W. O. Head in his car to the picnic ground. Broiled, fried, toasted, rolled, stuffed, baked, the finny tribe was served in large and small portions. In addition, barbecued meats and all kinds of light refreshments were provided. After the luncheon, at 2 o'clock in the afternoon, the members and friends of the club participated in athletic contests. One of the most exciting events was the tug of war.

Watertown is Active—Plans are afoot for a 1-day sanctioned race meet on the ½-mile fair track at Watertown, N. Y., September 7, the final day of the Jefferson county fair. There also is to be a motor car show at Watertown during the fair.

Big Meeting Called—President W. J. Clemens, of the Portland Automobile Club, has set August 4 and 5 as the dates for the annual Pacific highway convention this year, to be held under the auspices of the Portland Automobile Club. Every city on the Pacific coast will have representation at this meeting.

Aroused in Kentucky — Impetus was given to the state-wide good roads movement last week when delegates from ten counties met at Middlesboro and formed the Southern Kentucky Good Roads Association. This organization will seek government aid in the near future for building the wilderness boulevard, to run from Big Stone Gap, Va., to Boonesboro, Ky.

Tips for Tourists—Announcement is received at the office of the Automobile Club of Syracuse that 1 mile of street in the city of Auburn, on the road to the town of Sennett, is torn up. The Auburn club, which sent the notice, advises tourists coming east from Syracuse to turn to the right by the cemetery, top of hill and south of the village; this route taking them past the county home to North street and thence to the center of Auburn. The work is expected to be in progress for 2 months. In the good roads plans, it is announced also that 3 miles of new highway are to be constructed in the town of Elbridge. The ferry between Cayuga and Seneca counties is reported to be giving good

service. The trip is being made much more quickly than last year. This ferry is on a favored national route for motorists.

Make a Long Tour—Officials of Terre Haute, Ind., including Mayor Gerhardt, are on a 3,000-mile tour in a Franklin studying the motor problem, with the idea of using motor cars in the municipal service. The party was in New York last week.

Wilmington in Line—The city engineering department is making plans for the first municipal garage for Wilmington, Del., the police department having planned to erect one in the rear of the city hall. The department will provide itself with one or more motor patrol wagons, one having been ordered, to be delivered in about a month.

Big Parade at Fall River—One of the big features of the cotton centennial celebration at Fall River, Mass., last week was a motor parade in which 200 vehicles took part. There were many pleasure cars, a large number of commercial vehicles, including public service wagons, a couple of racing cars, the Knox and Alco that competed at Indianapolis, making a most complete line. The pleasure cars were all decorated and prizes were awarded.

Experiment a Success—The first Sunday motor cars were allowed on the Revere beach reservation, near Boston, showed the experiment was not a dangerous one and Superintendent West of the metropolitan park police was delighted by the manner in which the motorists respected the traffic regulations. There were 75,000 people on the reservation during the day and as it stretches but little more than a mile, the motorists had to go through the immense crowds. There was not a single accident noted, even the bumping of a car against another, although there were hundreds of machines passing along the boulevard.

Alaska Roads—Last year congress appropriated $325,000 for road building in Alaska and representative commercial bodies of Alaska now are asking the commercial bodies of the Pacific coast cities to aid them in securing further appropriations. Under the form of government now imposed on Alaska, the territory has no means of forming road districts or levying taxes for roads. It is entirely dependent on the federal government. For a district so large as Alaska, $325,000 has been but a small item, but the money under the direction of the federal commission has been well expended. One of the principal highways now under construction is the Valdez-Fairbanks road. This road is now completed from Valdez towards the summit of Thompson pass, so that during good weather motor cars may be operated for 90 miles. A motor stage was put on the run late last summer, and the travel by that means has been increased this spring. During the past winter motor cars could not be operated on account of the deep snows. In constructing the road the government has adopted easy grades and is building a smooth roadbed with permanent bridges. One of the most important bridges is across the Saina river, beyond the summit of Thompson pass.

Kentonites Want a Home—At a recent meeting of the Kenton Automobile Club, of Kenton, Ohio, steps were taken to secure permanent club rooms. It was also resolved to petition the city council to enact a stricter traffic ordinance for the municipality.

Converted to Oil—Muskegon county will be the second county in Michigan to try oiling its roads. A carload of oil has been received by the county highway commissioner, who will immediately start oiling the road between Muskegon and Cedar Springs, which will mean about 45 miles of good roads for the county.

Another New Club—Tentative plans for the formation of the Western Maryland Automobile Club, which will affiliate with the Automobile Club of Maryland, were made at a meeting in Frederick, Md., last week. J. Windsor Williams was made chairman and Dr. J. M. Goodman, secretary. About sixty members will compose the club at the start, and they propose to purchase a garage for their convenience.

Car Thieves Active—There is an epidemic of car stealing in Columbus, Ohio, during the past few weeks and the police department has been appealed to in an effort to stop the practice. In the past 10 days about fifteen motor cars have been stolen and driven, although the majority have been recovered where they were abandoned by the thieves. Chicago also is suffering from the same epidemic.

Utahans Would Tour—The proposed Salt Lake City-Denver-Salt Lake City reliability is making headway slowly but surely. The most recent entry was that of the Case. It has been decided to invite owners to enter on the same basis as the dealers, and, if possible, the run will start August 1. The Denver Motor Club has issued an invitation to the Salt Lakers to enjoy the privileges of its club rooms while in Denver, and also has promised to meet the tour in a body at Cheyenne, escorting it into Denver.

Ohio Road Work—Wood county, Ohio, is at work on a stretch of 13½ miles of stone road which is to complete what is claimed to be one of the finest motor courses in northwestern Ohio. The commissioners also have begun the work of finishing the stoning of the old Findlay pike running between Perrysburg, O., and Findlay, O., through Bowling Green. There also is under way 7 miles of pike between Bowling Green and Trombley, which will connect with a stone road running to the south part of the county and connecting with a pike leading into Findlay. From there is a macadam road leading to Bellefontaine, O. It is the intention also to soon begin work on 6½ miles of pike, which will complete the road between Bowling Green and Perrysburg, it extending north from the pike at the Bend. The course through Wood county is 26 miles long.

Another Touring Club Branch—A branch office of the Touring Club of America will be established in Baltimore July 1. It will be in charge of Ferdinand C. Latrobe.

First Entry Received—B. E. Simpson was the first entrant in the coming Twin City-to-Helena tour. With the issuing of the entry blanks came the announcement that Charles F. Phillips, of St. Paul, has hung up a trophy which will be permanently awarded to the entrant of the car standing highest on the list of those which come under the runabout division.

Dividing the Taxes—Every township in Iowa will get its first portion of the motor tax collected under the new law August 1. State Treasurer Morrow will on that date make a record of all money received for motor car licenses and send to the townships their proportionate shares. Eighty-five per cent of the funds derived from the licenses will be used for good roads work in the state.

Building Magnificent Boulevard—The county board of supervisors of Milwaukee has started preliminary work on the proposed new Janesville plank road parkway and boulevard, which will be 6 miles long and cost approximately $100,000. The present roadway will be torn up and reconstructed and made 150 feet wide. There will be a parkway 60 feet wide in the center and a 27-foot drive on each side, with 3-foot walks. The entire 6 miles will be paved with bithulithic asphalt, as in the city of Milwaukee.

Many Signs Erected—The Manitowoc County Automobile Club has finished its sign-placing campaign in Wisconsin, and all of the main-traveled thoroughfares leading out of the city are now designated by metal signs, showing the distances from Manitowoc and warnings of dangerous curves and obstructions. The club at a recent meeting decided to petition the common council to repeal a section of the present ordinances prohibiting motor cars passing teams on bridges. Under the auspices of the club, the city of Manitowoc will use oil on a few principal streets for the first time this summer.

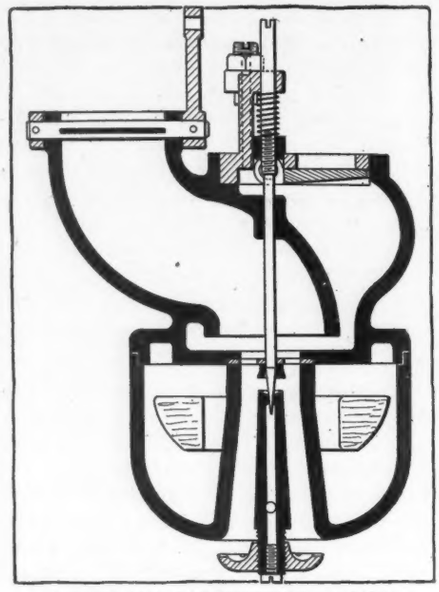
New Chicago Club—The Ridge Automobile Club was formed June 20, representing the interests of the motorists from Eighty-seventh street south to the Chicago city limits along the Blue Island ridge, which takes in Beverly, Longwood, Walden, Tracy, Belmont and Morgan Park. Dr. F. M. Clement was elected president and Paul B. Armstrong was elected secretary and treasurer. The club will use every effort to secure a connecting link between this district and Chicago, as the present roads are very poor, and also will expect to join other clubs in the good roads movement and other matters of interest to all motorists. The club has a big field of possible operation and results are looked for.

Current Motor Car Patents

PETERSON CARBURETER—No. 994,191, dated June 6; to Jonathan Peterson, Brooklyn, N. Y.—In a carbureter, the combination with an open fixed air passage, of an auxiliary air intake, a gate for closing the intake, means normally holding the gate in closed position, a support for the gate, a cam carried and operated by the gate, a block engaging the cam and movable in a plane intersecting the gate support, a needle valve adjustably mounted in the block, means for holding the block against the cam, and a fluid nozzle co-operating with the valve.

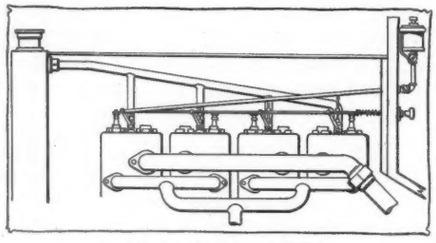
Schubert Tire-Pressure Gauge—No. 994,877, dated June 13; to Frederick Schubert, Sellersville, Pa.—The pocket pressure test gauge to which this patent relates is shown herewith; and comprises a case provided with a socket at its lower end, which is lined with a flexible material, a hollow pin in this socket, a Bourbon-tube spring fastened to the case, this Bourbon-tube spring having a communication with the pin and socket, a hook on the free end of the Bourbon-tube spring adapted to engage a stud mounted on the free end of a sector, a pinion mounted upon a pinion shaft and engaging the sector, an indicator surmounting the pinion shaft, a dial upon which the indicator shows the pressure and means for setting the sector and indicator to zero, this means comprising a weight acting on the sector only when the gauge is inverted.

Koeb and Thompson Frame Design—No. 999,155, dated June 13; to Emil Koeb, Leipsic, and Ralph Thompson, Springfield, Ohio—As illustrated herewith this patent pertains to radical departure in frame and transmission design. It is a combination with the main frame of a motor car, of a supplemental frame F located



PETERSON CARBURETER DESIGN

beneath the rear portion of the main frame and pivotally connected thereto at its forward end so its rear end may move vertically; and ground wheels connected to the supplemental frame near the rear

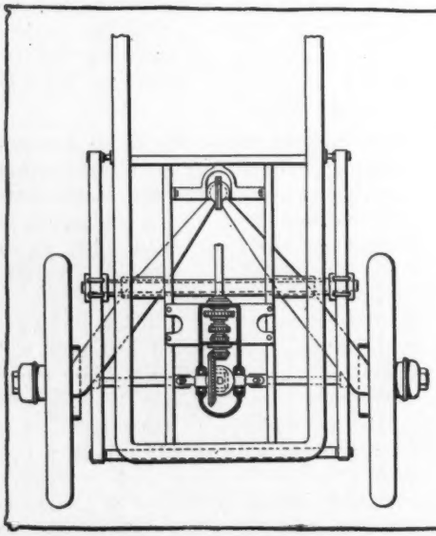


STOWE MOTOR PRIMER

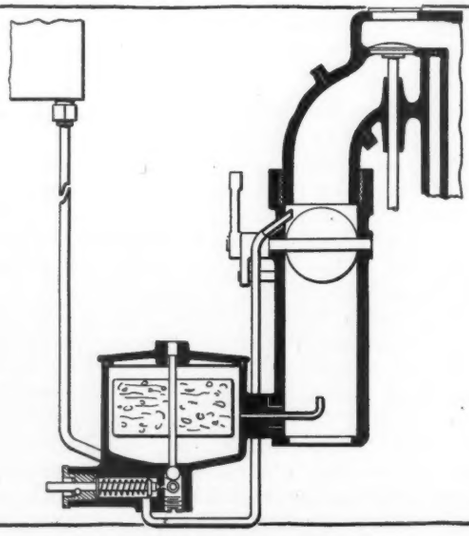
end thereof, and of springs interposed between the main frame and the supplemental frame, connected at their opposite ends to the main frame, pivotally mounted on the supplemental frame at points between their ends and rigidly connected one to the other.

Carbureter Priming Attachment—No. 995,074, dated June 13; to Thomas McCarthy, Detroit, Mich.—This patent covers a priming attachment for carbureters such as is shown herewith. It is a combination in an internal combustion engine with a float chamber, a fuel supply chamber provided with a fitting having an auxiliary chamber therein which communicates with the fuel supply chamber, a liquid fuel reservoir in communication with the fuel supply chamber and arranged to supply fuel thereto under pressure, a valve automatically controlling communication between the fuel supply chamber and the float chamber of the carbureter, a pipe leading from the auxiliary chamber to the intake pipe of the cylinder, a second valve controlling communication between the fuel supply chamber and the auxiliary chamber, a spring normally holding the second valve in a closed position, and means for opening the second valve when starting the engine to provide a continuous supply of fuel direct from the reservoir to the intake of the cylinder independent of the float chamber of the carbureter.

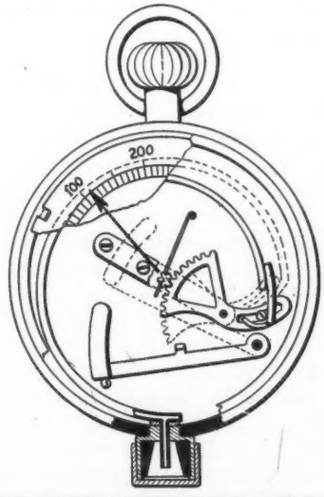
Stowe Motor-Priming Device—No. 995,201, dated June 13; to Elihu B. Stowe, Stockton, Cal.—This is a priming device consisting of a small gasoline pipe leading from an auxiliary gasoline chamber beneath the float chamber to the intake manifeld above the throttle. Its opening into the gasoline chamber is guarded by a check valve normally held closed by a spring; but with means for holding the valve open when starting the engine, so that the engine suction drains the gasoline up the tube into the manifold above.



THOMPSON'S FRAME DESIGN



McCARTHY'S PRIMING DEVICE



SCHUBERT'S PRESSURE GAUGE

The Motor Car Repair Shop

MANUFACTURERS of motor cars have learned that the more a driver of their product knows of its mechanical construction, the more efficient is its service; and with this fact in view they have issued instruction books containing a wealth of information and advice regarding the care and operation of their machines. Every driver of a motor car should insist upon having one of these instruction books and it should be kept under the driver's seat where it never is in the way, and always handy when most needed. Motor Age always shall endeavor to co-operate with the manufacturers in their efforts to educate the motorist, and one object of the department shall be to show and remind the motorist how to do little things that enable him to get better service and more joy out of his car.

Repairing Chassis Springs

The breaking of a chassis spring while touring through the country is a common occurrence, and a few words on what to do in such cases may be appreciated by those who have suffered and those who may at some future time suffer this misfortune. In Fig. 2 an illustration is given, showing how a temporary repair was made upon a spring whose three lower leaves were broken on striking an apparently shallow hole in the road which was filled with water. After the break A occurred the car was slowly driven to the next farmhouse, where some 2 by 4-inch wood, a saw and some baling wire were obtained. The short block E was cut off first and two shallow grooves S were cut into one side of it so that it would clear the spring clips and rest flat on the central portion of the top spring leaf. The sides of these slots were cut with a saw and then finished up with a cold chisel carried in the tool kit of the car. The piece B then was cut off and nailed to the short piece E, so that the sides were flush and its ends extended over the ends of the short block equally distant on either side. The top block C, which was made just a trifle longer than the short bottom block, was cut off and slotted in the same manner as the under block, only the slots were not so wide and farther apart as designated by the letter F. This block then was nailed to the long piece, centrally located with the slots up; the frame of the car was then jacked up so that the injured end of the spring was a little above its normal height; and the blocks were set in position as shown and securely bound into place with the wire D. When this was done a few strands were wound about the two top pieces, as at G, to add to their security; then a few more strands were bound laterally around the whole, as at L. This completed the temporary repair. When the jack was removed from under the frame the under side of the frame of the car then was jacked up 1 or 2 inches, which was as desired, a little clearance being given so that a little of the remaining elasticity of the spring might be utilized, Many miles were made on this repair.

Hints for the Amateur

Troublesome Connections

The average motorist does not realize how much trouble and expense often can be saved by having the little apparently

FIG. 1—A POOR BATTERY CONNECTION

insignificant things about a car made as substantial as possible. The little things in mind are grease cups or oil caps that are lost and not replaced; loose nuts and bolts; acetylene gas piping that is loosely attached, too small in section, kinked, or so arranged with respect to the lamps that the hose-connections must be kinked or allowed to rub against some portion of the frame, causing rapid wear and leakage; and, perhaps, most important of all, shoddy terminal connections for the ignition or electric lighting outfits.

Dry battery terminal connections come in for no small amount of neglect and consequently are the cause of considerable trouble. Stranded wire connections without terminals are most undesirable. There are cases on record where many a joyful outing has been turned into a discouraging failure because of poor battery connections. For example, an experienced motorist recently brought his car in front of the house and left it while he went in to dinner. At the table a most enjoyable program was planned for the wife and children, and it was with great hilarity that the family climbed into the car shortly afterward. All in readiness, the motor was cranked—but the motor did not start; more cranking brought forth no better results. The carbureter was primed and gasoline flowed freely. The ignition was tested by removing a plug and resting it with its base in contact with the engine cylinder and then cranking the motor; another plug was tested in a similar manner, but there was no spark in either case. The ignition system was a dual one with a magneto, and dry cells for starting. An inspection of the battery terminals followed but all binding nuts were tight. A general inspection of the entire ignition system then was made, which consumed much time, but revealed nothing but a perspiring father and a family depressed.

A local repairman was called, the trouble explained to him, then he removed and carefully replaced all battery connections, tested the plugs by cranking and the spark occurred. The plugs were replaced, and motor started on first turn of the crank. The cause of the trouble was this: The stranded wire attached to one of the terminals had been attached so that one strand had become jammed in the threads between the screw and nut. This made the nut run tight upon the single strand but not upon the bundle of strands which constituted the bulk of the cable. This single strand made good contact as long as it lasted, but being cut almost through to begin with, it did not last long; and when it broke, the binding nut with the broken off end jammed between its threads was deceivingly tight, but the connection itself was very loose, as shown at S, Fig. 1.

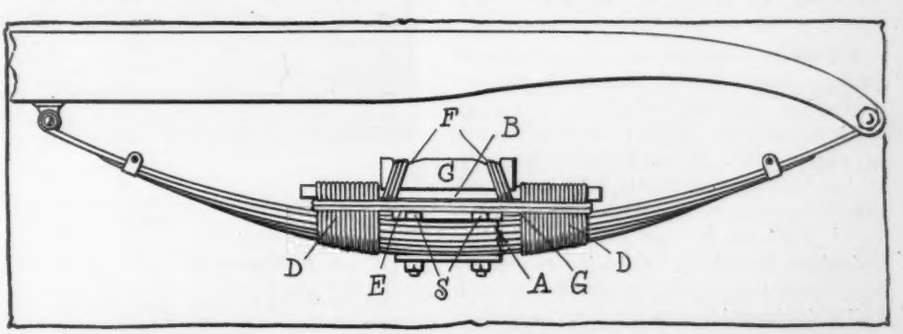


FIG. 2—SHOWING HOW A TEMPORARY SPRING REPAIR CAN BE MADE

Among the Makers and Dealers

SEEKS a Foreign Opening—The Gray Specialty Co., of Newark, N. J., now is marketing the touring necessities formerly handled by the Standard Leather Washer Mfg. Co. It is planning a foreign invasion.

Adds to Plant—The Fulton Machine and Forging Co., of Canal Fulton, Ohio, has made an addition to its plant and has installed $30,000 worth of new machinery for making steel drop forgings for implements, motor cars, buggies and wagons.

Will Incorporate—The Radio Mfg. Co., of Columbus, O., which has been in business in East Spring street for some time, manufacturing a patent radiator and other specialties, will shortly be incorporated under the same name and enlarge its business and its facilities for operation. J. C. Spangler, E. M. Brinker and others are interested in the company.

Chance at Yakima—Yakima, Wash., with a population of 15,000, now boasts of more than 600 motor car owners, supporting three well-equipped garages. There is a good opening in that city for light commercial cars, as it is in the heart of a great apple country. A few of the orchardists already have cars of this type which are used in transporting their fruit to market.

Enlarging Plant at Columbus—The Columbus Vehicle Apron and Hood Co., located at Fourth and Naghten streets, Columbus, Ohio, has completed the work of enlarging its plant, which will have 16,000 additional square feet of space. The business of the concern, three-fourths of which is in the manufacture of motor accessories, has increased to such an extent in the past 2 years that the additions were necessary to keep up with the trade.

Employes Serenade Willys—As a fitting celebration of the closing of the 1911 business season, the employes of the Willys-Overland Automobile Co. serenaded President Willys at his home on Robinwood avenue, Friday evening. Three large factory trucks, decorated with electric lights, carried the Overland band. Mr. Willys responded to the graceful compliment by escorting the crowd to the farm, where luncheon was served.

Swinehart Changes—A number of changes have occurred recently in the organization of the Swinehart Tire and Rubber Company, whose factory is located at Akron, Ohio. W. J. Kreuder, formerly of the Goodyear company, now is general superintendent of the Swinehart factory. J. J. Tomkins is now manager of the Swinehart branch in Philadelphia, and G. E. Grimes has become a member of the Philadelphia sales force. Mr. Tompkins was formerly manager of the Hartford company's Detroit branch, and Mr. Grimes was lately connected with the Philadelphia branch of the Republic Rubber Co. The Swinehart has just established an agency in Seattle, Wash., with the Morgan Auto Supply Co.

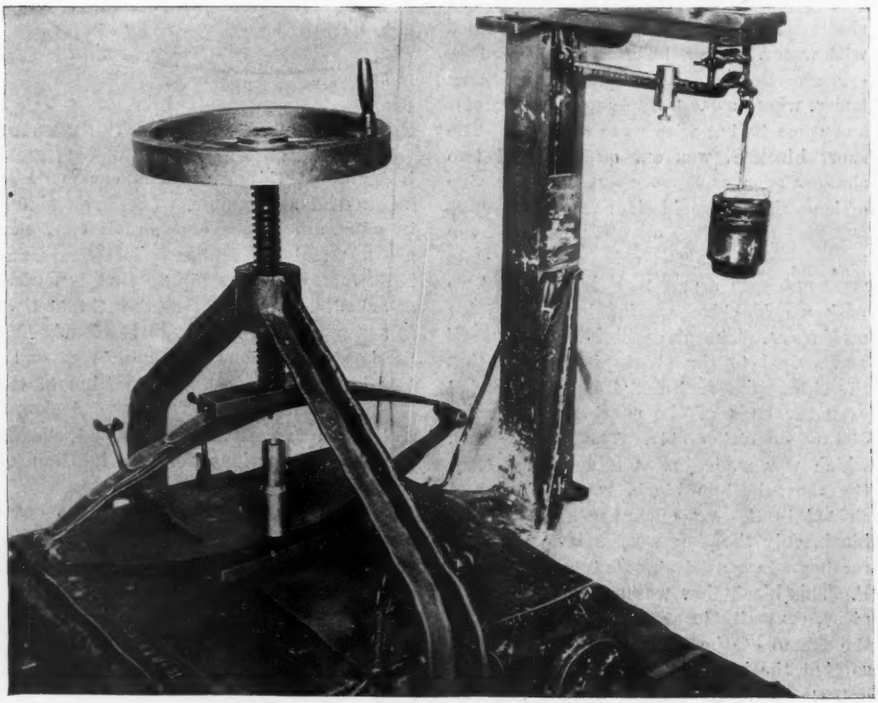
Sells Trucks in Manila—The White Co. announces the sale of seven of its gasoline driven trucks consisting of two 3-ton, three 1½-ton and two of 1,500-pound capacity, to the quartermaster's department of the United States army at Manila.

A Treasury Ruling—On the exportation of motor car coverings manufactured for F. S. Carr Co., of Boston, from imported cloth, the treasury department at Washington has ordered that a drawback be allowed equal in amount to the duty paid on the imported cloth, less the legal deduction of 1 per cent.

Kinsey Will Expand—Plans are now being prepared and the contract will be let within the next 2 weeks for two large fireproof buildings, which will be erected by the Kinsey Mfg. Co., of Toledo. Work on the buildings will be rushed, and it is expected that they will be ready for occupancy before the close of the summer. It will give the company nearly an acre of additional floor space and enable it to employ at least 100 more men, which will bring the maximum force of skilled mechanics to about 800.

An Old Timer—Leonard B. Nichols, president and treasurer of the carriage and body building firm of Chauncey Thomas & Co., of Boston, who celebrated his fiftieth anniversary in business recently, claims to be the pioneer motor car builder in New England. More than 25 years ago his firm built an electrically-propelled machine to the order of a customer and it was in use a long time. His company was the first to introduce rubber tires for vehicles in city of Boston.

Rushing Work on Tire Plant—The old Federal Mfg. Co., of Milwaukee, has become the Federal Rubber Mfg. Co. now that is under the control of Byron C. Dowse, H. A. Githens, Richard Ward and others prominent in the tire trade. Work now is being rushed on the plant, and besides the addition of considerable new tire-making machinery there will be constructed an administration building 50 by 70 and three stories high, a two-story rubber wash and dry building, 35 by 160; a three-story addition to the tire construc-



TESTING CHASSIS SPRINGS

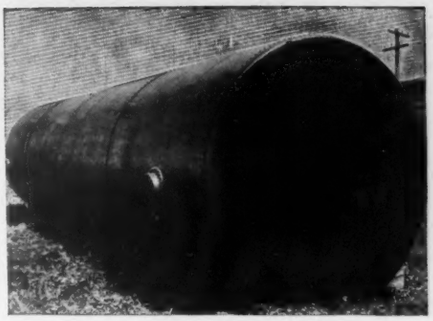
The above illustration shows how the chassis springs that go into the makeup of the Franklin cars are tested for compression. Every spring is tested in this way and is required to support a certain weight when compressed to a certain depth. The scales is provided to indicate the weight or pressure on the spring, and a limit gauge placed between the bows of the spring determines the amount of spring compression. The spring is compressed by screwing down on the large screw, which is held in a yoke secured to the base of the scales with four clamps. The scales are an ordinary type and the testing device can be readily applied or removed at will

tion building, 40 by 100; a three-story 40 by 100 machine shop, and a one-story building in the reclaiming plant.

Another General Motors Payment—Following the announcement made a few weeks ago of the advance payment by the General Motors Co. of $500,000 on the $1,500,000 sinking fund due last October 1, comes the information that at the last meeting of the directors of the company another payment of equal size was authorized.

Koto Goes to Detroit—A. S. Koto, formerly an executive in the factory of the Warner Instrument Co., of Beloit, Wis., has been transferred to Detroit, where he assumed charge of the Warner branch at that point, at 870 Woodward avenue. The Detroit branch, through its salesmen, covers the entire state of Michigan and a portion of Wisconsin.

Rambler's Big Insurance—The Thomas B. Jeffery Co. has just placed with a Milwaukee insurance agency one of the largest single contracts for fire and lightning indemnity known in the United States. The policy is in blanket form and written on a basis of $1,400,000. It also is a floater policy, and covers the entire 1911 output of the Rambler works from the time the cars leave the shops until placed in the hands of purchasers. The policy also covers losses on account of self-ignition, explosions and hazards of transportation and theft. It is flexible,



HUGE GASOLINE TANK

This is a gasoline tank holding 12,000 gallons, which has just been installed at the plant of the Colby Motor Co., of Mason City, Ia., enabling the company to buy gasoline in car lots

and the Jeffery company has the privilege of extending it to $2,000,000, depending on the total output, an accounting to be made at the end of the season.

Johnston Returning to Coast—William R. Johnston, assistant general manager of the Stromberg Motor Devices Co., of Chicago, has been appointed Pacific coast manager for the Stromberg and for the Stewart & Clark Mfg. Co., with headquarters and branches in San Francisco and Los Angeles. Other branches are soon to be opened at Portland, Seattle and Spokane. The entire western territory, including California, Washington, Oregon, Idaho, Nevada, Arizona, and Utah, has been given over to Mr. Johnston's attention by these two concerns. Mr. Johnston retains his interest in the Stromberg Motor Devices Co. as heretofore, and will remain actively interested in its affairs and progress.

Joins Bretz Staff—W. H. Stillwell, E. E., has just been added to the engineering and selling force of the J. S. Bretz Co., importers of F. & S. annular ball bearings, German steel balls and U. & H. master magneto.

Outing for Stenographers—The stenographers of the H. H. Franklin Company enjoyed their annual outing last Thursday, going to Pleasant Point, near Oswego, N. Y., on Lake Ontario. Ten cars were employed, each containing six young women.

Death of R. M. Hutchinson—After an illness of some length, R. M. Hutchinson, owner of the Morton Place garage, agent for the Moline, Indianapolis, died in Mercy hospital, Muskegon, Mich., on June 24. He was 54 years old.

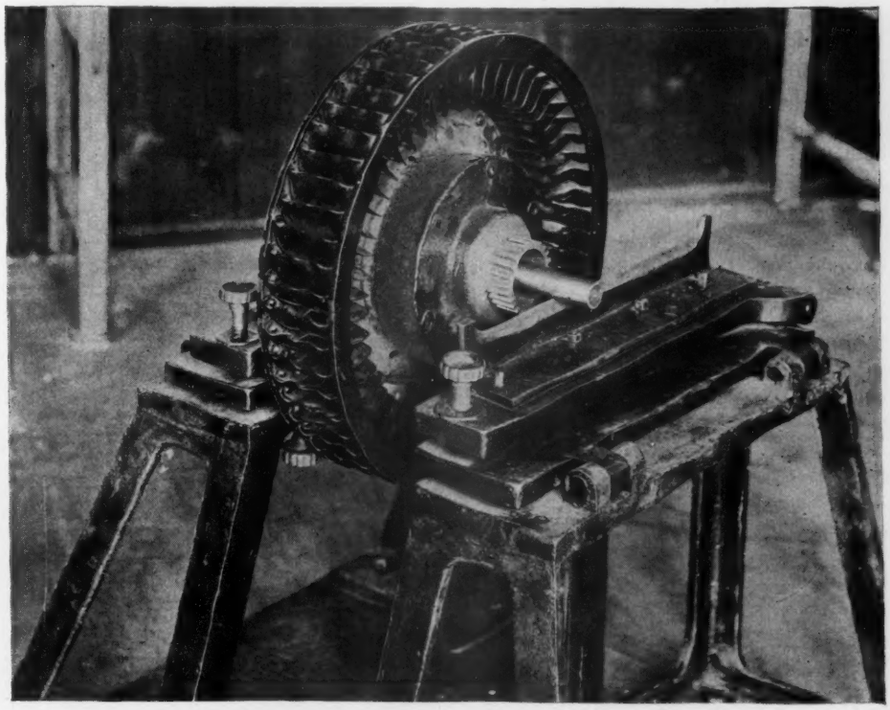
Buick Production—The Buick Motor Car Co. is manufacturing more cars at the present time than at any time during the season of 1911. More than 700 cars are being shipped from Flint every week. It now seems probable that the manufacture of 1911 cars will continue until August.

Will Move Branch—The St. Louis branch of the Firestone Tire and Rubber Co. will be removed to new quarters, northwest corner Conklin and Locust streets. Property for this purpose has been secured and work will commence at once on a building constructed especially for the application and sale of Firestone products for all its different lines.

Another Firsetone Branch—The Firestone Tire and Rubber Co., of Akron, O., has closed a lease for the premises at 724 Main street, Buffalo, N. Y., where it will open a direct factory branch early in July. The new establishment will be in charge of Raymond W. Phelps, formerly with the New York branch. It makes the thirty-fifth distributing station for Firestone solid and pneumatic tires and rims.

Reviving Old Scheme—Capitalists of Columbus, Ind., are trying to sell $80,000 worth of stock to revive a plan for building a cement highway from Columbus to Hope, 30 miles. It is proposed to run forty-passenger motor cars over the road and conduct a general passenger and freight business. The scheme was suggested several years ago by Z. T. Sweeney, of Columbus, former state fish and game commissioner.

Benjamin Re-elected—The Syracuse Automobile Dealers' Association, at its annual election, re-elected C. Arthur Benjamin president; Melvin W. Kerr, vice-president; George E. Messer, secretary; John H. Valentine, treasurer; directors, Samuel Silverman, Jr., E. P. Horton, G. H. Norris. The association decided to hold its first annual outing at Mexico Point a week hence, for association members and accessory dealers.



TESTING BALANCE OF FLY WHEELS

The above illustration shows the means employed by the Franklin company to test the balance of its flywheels. It consists simply of two parallel rails upon which rests the ends of an arbor to which the flywheel is attached. These rails are adjusted so as to be perfectly horizontal, so that when the flywheel shaft rests upon them in a few different positions, any inequality in weight or balance will cause it to roll and come to rest with the heaviest portion at the bottom. Should a heavier portion be found, holes are drilled in the rim of the flywheel and stock thus removed until a balanced condition obtained.

Brief Business Announcements

BOYD, Wis.—E. R. Cooper has been appointed local agent for the Case.

Gloversville, N. Y.—A partnership has been formed by Louis Galinsky and Paul Cayzer to conduct a garage.

Washington, D. C.—The Mears Automobile Supply Co. has opened a salesroom at 916 New York avenue, N. W.

St. Louis, Mo.—Nelson T. Gutelius and Felix Chaudet are forming a company to manufacture the Kastrup patented motor.

New York—Senior & Stout have leased the two-story garage at 153 West Fifty-sixth street to Alexander Faure for 5 years.

Dallas, Tex.—The Mitchell Auto Co. of Texas will occupy the three-story brick building at the corner of Commerce and Pearl streets.

Pontiac, Mich.—Ralph J. Laing and Raymond Monroe have taken over the Pontain garage on West Pile street and formed the Pontiac Taxicab Co.

Baltimore, Md.—An accessory department has been opened in connection with the new headquarters of the Lozier Sales Co., Lozier agency, at North avenue.

Washington, D. C.—The Speedwell Sales Co. has been formed here to handle the Speedwell. A. D. Loffler is president of the company, which has headquarters at 3830 Georgia avenue, N. W.

Boston, Mass.—The American car is again represented in the Hub. It was thought that the factory would open a branch, but M. H. Doane, manager of the Essex Automobile Co., has taken it on as an addition to his line.

Portland, Ore.—J. H. Wilcox, formerly with the E-M-F Co., at Portland, has accepted the position of sales manager with the Michigan Automobile Co., which has recently established an agency in Portland on Hawthorne avenue.

Camden, S. C.—Frank Brooks, formerly of Savannah, but who has been connected with the Camden Motor Co. here for the past year, has severed his connections with that firm and has opened up a garage in the Clyburn building.

Louisville, Ky.—The Louisville Auto Supply Co. has filed amended articles of incorporation increasing its capital stock from $5,000 to $15,000. The articles were signed by J. G. Wathen, J. A. Serpell and O. H. Wathen.

Fort Worth, Tex.—The Allen Motor Car Co., of Fort Worth, filed an amendment increasing its capital stock from $15,000 to $25,000 and changing its name to the Allen-Vernon Motor Car Co. It will occupy the new garage building now under construction at Eleventh and Commerce streets. The firm will also have headquarters in Dallas at 2025-27 Commerce street. The new firm will handle Packard cars and trucks, Rauch & Lang electrics and Cadillac cars.

Portland, Ore.—The Stoddard-Dayton Auto Co. recently accepted the Portland agency for the Paige-Detroit.

Superior, Wis.—The Ross Motor Co. has awarded contracts for the construction of a $15,000 addition to its garage.

Oakland, Cal.—The California Motor Car Co., a corporation formed to manufacture pleasure cars, soon will be in operation on High street.

Flint, Mich.—J. N. and R. A. Fowler have opened a garage in the new Yates block on North Saginaw street. They will handle the Everitt cars.

Medford, Ore.—A new garage in Oregon is the recently completed home of the Crater Lake garage at Medford. J. H. Neff is the manager.

Keansburg, N. J.—Charles Carr is having a garage built on his property on Church street. The garage is of hollow tile, stucco construction.

Delavan, Wis.—J. C. Hebbe of Fort Atkinson, Wis., has established a branch garage, nearly as large as his Fort garage, in the Van Velzer building at Delavan.

Mechanicsburg, O.—Miss Nella Brown has taken the agency for the Brush in Campaign county, O. She is one of the few women agents in the Buckeye state.

Columbus, O.—Ralph Puckett, formerly connected with the Hudson Sales Co. of Columbus, O., also agent for the American, has gone to Baltimore, Md., where he will make his headquarters in the future.

New York—Schedules in bankruptcy of the Jencick Motor Mfg. Co., of Port Chester, show liabilities, $55,674, and assets, $64,674, consisting of factory property, $15,318; on which there are mortgages for $27,500, etc. Among the creditors are, Louis C. Mertz, $10,000; Geo. Mertz's Sons, $9,320; George E. Mertz, $2,809; Frank C. Mertz, $1,000; Harry Mertz, $500; Bosch Magneto Co., $1,750, and Tams Lemoine & Crane, $7,500.

Baltimore, Md.—The D. C. Walker Auto Co. has become the distributor for the state of Maryland for the Cole.

Grand Rapids, Wis.—Jensen Brothers have opened a garage at Grand Rapids and plan to procure several agency lines.

St. Louis, Mo.—The recently organized White Motor Car Co., headed by T. J. Cooper and J. W. Childress, is now in new quarters, 1820 Locust street.

Baltimore, Md.—Charles W. Lewis will build a brick and stone garage at 343 Warren avenue. According to the plans it will be 14 by 18 feet, one story high, with tile roof.

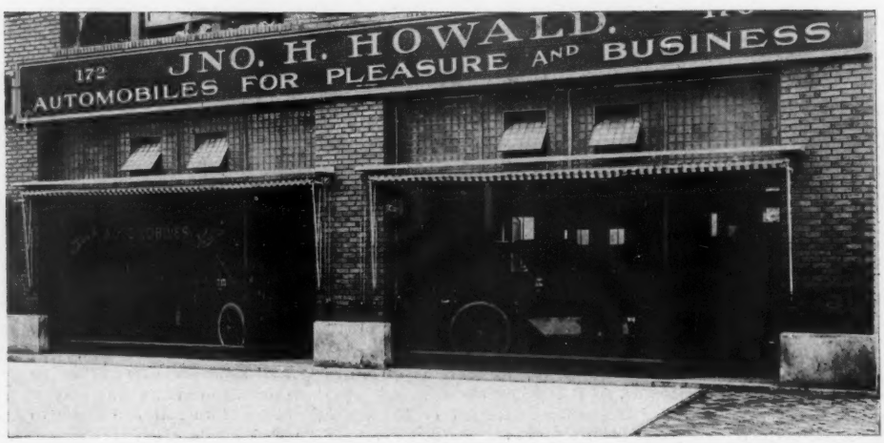
Janesville, Wis.—The Janesville Vulcanizing Co. is rebuilding its shops, and when improvements are completed, the company will have one of the largest tire plants in southern Wisconsin, it is claimed.

Washington, D. C.—The Mack truck agency, formerly controlled by the Pope Automobile Co., of Washington, has been given to W. B. McBurney. He has taken part of the salesroom of H. B. Leary, Jr., the Hudson agent.

New York—J. Arthur Fisher has sold for Everett & Heaney & Lawrence a two-story garage on a lot 60 by 100, in Mermaid avenue, Edgmere, L. I., to George Stumpp, and has leased the property for Stumpp to the Union League garage for 10 years.

Fond du Lac, Wis.—Henry Schwartz, of the E. W. Clark Motor Co., Fond du Lac, Wis., has resigned to take an interest in the Fond du Lac Auto and Tire Repair Co., purchasing the interest of L. J. Remington. R. Lee will be Mr. Schwartz's principal partner.

New York—The Empire City Automobile Co., representing the Paige-Detroit and Colby cars in this territory, announces the opening of a new branch salesroom in the Tollner building, 1178 Bedford avenue. The new salesroom will be in charge of Walter D. Tyler, formerly



AGENCY OF JOHN H. HOWALD, HANDLING BUICK AND WELCH AT COLUMBUS, OHIO

of the Hudson forces. This company has also opened a service department at 343-345 Willoughby avenue.

Washington, D. C.—Clayton Graff has secured the Marmon agency and will have temporary quarters at 1341 W street, N. W.

Beaumont, Tex.—The East Texas Motor Co., with George W. Newman, K. J. Smith and T. J. Halley as the organizers, is the latest addition to the industry in Beaumont.

Franklin, Tex.—J. H. Parnum has purchased the workshop of S. H. Ferguson and will engage in the business of repairing machinery and dealing in gasoline engines and motor cars.

Oakland, Cal.—J. W. Hedges has begun the construction of a large garage on the corner of Grand avenue and Nutmeg street, San Diego. It will have a cement floor and corrugated iron sides and roof.

New York—Manager C. S. Henshaw, of the Thomas Motor Co., has leased the premises on the northeast corner of Broadway and Sixty-fourth street, from July 1, together with 20,000 square feet of upper floor space in the same building for a service department.

Fort Wayne, Ind.—Two new local concerns have filed incorporation papers at Indianapolis. They are the Evans Coal Co. and the Interstate Automobile Agency. The directors of the agency, which has a capital stock of $10,000, are C. M. Hoover, George Moring and A. G. Hotchkiss.

Des Moines, Ia.—A new motor car concern, representing the Nyberg Automobile Works, of Anderson, Ind., and to be known as the Nyberg Auto Des Moines Co., has located here and has established temporary quarters at 419 Grand avenue under the management of Fred Walker.

Baltimore, Md.—The Mack Motor Truck Co., of Baltimore City, is now a direct branch of the factory and will hereafter be known as Mack Brothers' Motor Car Co. A. F. Mack will be the manager, and under the new arrangement the branch will be under the supervision of the factory. The branch will be located at the same stand as the agency was, 12 West Eager street.

Chicago—Paul Picard, formerly selling Columbias in this territory, now is sales manager of the Chicago Fiat branch.

Fond du Lac, Wis.—The E. W. Clark Motor Co., of Fond du Lac, Wis., will build an addition to its garage and salesrooms on East First street.

New York—E. R. Bossange and Butler & Robinson, associate architects, have filed plans for the construction of a three-story garage, with a studio and apartments, on the south side of Sixty-sixth street, 180 feet east of Park avenue, for Mrs. C. F. Clark, at a cost of $25,000. It will have a frontage of 25 feet and a depth of 89.9 feet, and will be fireproof.

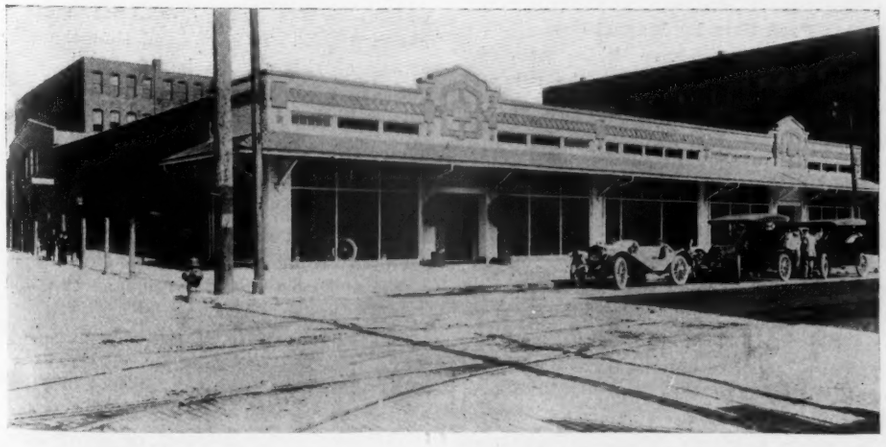
Washington, D. C. — Barber & Ross, Eleventh and G streets, N. W., have added a motor supply department.

Washington, D. C.—The Carter Motor Car Corporation, maker of the Washington car, is planning to open a salesroom on Fourteenth street, N. W.

New York—The Locomobile Co. of America is to erect a seven-story building for the accommodation of its business on the plot 16 to 22 West Sixty-first street, 80 by 100.5 feet. The plot now is covered with four five-story buildings. It was leased for 21 years, with renewal privileges.

Peoria, Ill.—The new agents of the Packard in Peoria are M. M. Baker & Co., Harrison and Water streets. Mr. Baker announced that his company had closed with the Packard people for the exclusive sale of their pleasure and commercial cars in Peoria and territory of central Illinois.

Denver, Colo.—Nelson S. Gotshall takes the place of W. R. Covington, who has just retired from the Krebs-Covington Automobile Co., of Denver, Colo., agent for Loziers and Detroit electrics. A. S. Krebs continues head of the firm, and Mr. Gotshall has charge of the sales. The company has just moved its offices to their new building at 741 Broadway, where large quarters are had.



NEW BRANCH HOUSE OF UNITED MOTOR COLUMBUS CO., COLUMBUS, OHIO

Recent Motor Incorporations

Buffalo—Bison Trimming Co., capital stock $10,000; to manufacture and deal in motor car tops; incorporators, Louis C. Beesing, Henry C. Michel and Jacob Miller.

Syracuse—B. W. Snow Co., capital stock $25,000; to manufacture and sell motor car parts and conduct a machine shop; incorporators, J. E. Snow, W. A. Snow and L. S. Chapman.

Worcester, Mass.—Worcester Taxicab Co., capital stock $37,200.

New York—United States Woodworking Co., capital stock, $100,000; to manufacture motor car seats; incorporators, H. Lewis, A. Panimo and J. E. Morgan.

Long Branch, N. J.—Brighton Auto Garage Co., capital $5,000; to operate garages; incorporators, David Grubar, Louis Foxler and Armin Koenig.

Milltown, N. J.—Brunswick Motor Co.; capital, $5,000; to operate and manufacture motors, engines, etc.; incorporators, Jules H. Michelin, Stephen Bridier and John P. Murray.

Dallas, Texas—Levy-Kramer Automobile Co.; capital, $10,000; incorporators, Melville Levy, Irvin L. Kramer, Edgar L. Pike.

Albany, N. Y.—Electric Omnibus Co., with offices at Green Island; capital, $1,000. Directors, Frank Chrysler, Amasa J. Parker, Jr., and Emery A. Hamblin, of Albany.

New York—Waterbury Commercial Co.; capital, $25,000; to manufacture motors, engines, vehicles, etc.; incorporators, J. Eisner, G. Malreison, F. E. Eiseman, New York city.

New York—University garage; capital, $120,000; to deal in, rent, store and repair motor vehicles; incorporators, Carlos R. Duque, George T. Green, Hjalmar H. Boyison.

Penn Yan, N. Y.—Wagener Brothers Automobile Exchange; capital, $10,000; to manufacture and deal in motor vehicles, etc.; incorporators, H. Allen Wagener, John A. Underwood, McClellan Townsend.

Akron, O.—Akron Taxicab and Transfer Co.; capital, $30,000; to do a general taxicab livery business and to operate a garage. The company takes over the business formerly operated by Charles E. Miles and others under the same name.

New York—Grand Garage & Livery Co., Hoboken; capital, $25,000; to operate garages, etc.; incorporators, J. F. X. Stack, J. Dunne, P. F. Stack.

New York—Atterbury Commercial Truck Co.; capital, $25,000; to manufacture motors, engines, vehicles, etc.; incorporators, Jerome Eisner, George Malraison, Frederick F. Eiseman.

New York—F. H. Hearring, Inc.; capital, $15,000; to manufacture and deal in engines, motors, machinery, etc.; incorporators, F. H. Herring, S. D. Herring and Charles L. Allen.

St. Louis, Mo.—Leeper Automobile Co.; capital, $2,000; to manufacture and deal in motor cars; Oscar W. Schmidt is the principal stockholder.

St. Louis, Mo.—The Oldsmobile Co. of Missouri; capital, $10,000; stockholders, W. B. Fewell, C. B. Riggs and Morton Jourdan.

St. Louis, Mo.—Warren Garage and Renting Co.; capital $10,000; to do a general motor car business; incorporators, William Warren, Anna M. Warren and Bert O. Nesslein.

St. Louis, Mo.—Guaranteed Electric Storage Battery Co.; capital, $2,000; to do general manufacturing business; incorporators, William D. McClain, Arthur D. Weld and D. G. Tutt.

Columbus, O.—Columbus Auto Top Co.; capital, $10,000; to manufacture all kinds of tops for motor cars and other vehicles; incorporators, John Oswald, Nelson Roller, L. D. Davis, Fred Oswald and E. W. Fickel.

Cleveland, O.—Interstate Rubber Co.; capital, $30,000; to manufacture all kinds of rubber articles; incorporators, Emil A. Obst and others.

Akron, O.—Manufacturers Rubber and Supply Co.; capital, $10,000; to manufacture all kinds of rubber products; incorporators, R. F. Dutt, R. F. Griffiths, William F. Pfeiffer, Frank C. Milhoff and H. E. Andress.

Paterson, N. J.—Bernhard Magid & Co.; capital, $2,000; to deal in supplies; incorporators, Bernhard Magid, Thos. Hughes and Nicholas Hughes.

Development Briefs

Safety Signalling Device

THERE are on the market several signal devices to take the place of the driver's hand when slowing up or on rounding corners. But in most cases it is necessary for the driver to either push a pedal with his foot or throw a lever in and out by hand. Consequently they have not come into favor with motorists, for in stopping a car one's hands and feet are usually engaged in throwing out the clutch, putting on the brake and changing gears.

A device that requires no gears, pedals or levers has recently been patented.

This is called the safety signalling device and it receives its action from the clutch pedal. A longitudinal rod, bolted onto the cross-members of the frame, extends from the clutch pedal to a little beyond the rear of the car, where there is an arm attached, it forming a right angle. This arm extends upward to about even with the mud-guard, where there is a brass box bolted onto the mud-guard. This box has a sliding shutter attached to the arm.

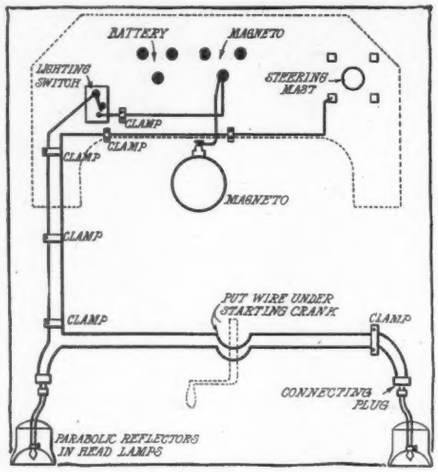
At the clutch the rod is bent so that the end comes into contact with a disk attached onto the clutch pedal. When the clutch is released, as in stopping, the action of throwing in the pedal causes the disk at the end of the pedal to push down on the rod, the arm at the rear of the car moves to the right, opening the shutter in the box and exposing a disk of vivid red, which at night is lighted by a lamp. When the clutch is again thrown in the end of the clutch pedal and the rod disengage. The rod is brought back to its neutral position by a spring that is attached to the end of the rod and a cross-member of the frame, causing the shutter in the box to close.

THE STEVENS IGNITER

Muffler Cutout and Signal

A combination of the muffler cutout with an exhaust whistle for installation in the exhaust pipe line between the engine and the muffler, is manufactured by the Skinner & Skinner Co., Chicago. The external appearance of the device is shown in the accompanying illustration. A balanced sliding piston valve working in a small cylinder gives either a whistle or cuts out the muffler at the will of the operator. It is brought into action in the usual way, by means of a button push pedal under the heel of the driver.

By pushing the pedal half way down the cutout is opened and locked automatically. If the pedal be pushed all the way down the whistle is blown until the pressure is relieved, when the device returns to a position of open cutout, unless a slight forward pressure is given the pedal. In this event the device is thrown out of operation and becomes merely a part of the exhaust pipe line without obstructing the passage of the exhaust gases to the muffler.



JOHNSON LIGHTING SYSTEM FOR FORDS

Lights Ford Cars by Magneto

Many attempts have been made by drivers of Ford cars to use the magneto as a source of power for the head and tail lights, usually with indifferent success. The Johnson Automobile Co. of St. Louis has brought out a lighting system by means of which the Ford magneto is utilized as a generator for the lighting current. It is claimed that by this arrangement the two headlights can be operated on the magneto without weakening the ignition of the motor. In the system referred to and which is illustrated on this page, the wires are made up into a cable with the terminals and connections ready to attach. Parabolic reflectors are also supplied by which the efficiency of the electric lights is very much improved.

EXTERIOR OF THE CUT-O-FONE

Stevens Igniter

In order to produce a system of ignition in which there is assured a hot spark at all engine speeds, combined with a mechanical regularity of action, E. W. Stevens has devised and put on the market the Stevens igniter. The spindle of the igniter is fastened to the end of the timer shaft of the engine in the same way as the ordinary timer used with a vibrator coil. The spindle carries a cam which has as many projections or nubs as there are cylinders. These nubs cause a tappet arm to flip back and forth. The tappet arm carries one of the platinum contacts of the circuit-breaker. The electric circuit is thus closed through a definite period, which is partly independent and partly subservient to the speed of the cam, for at high speeds the apex of the triangular cam nub lowers proportionately faster than at low speeds, slightly lessening the time of closure of the electric circuit.

The other elements comprise a simple distrbuter and a nonvibrating coil. Among the advantages claimed for this system are: Only one make and break in the primary circuit serving all the cylinders; a single spark coil and distributer; contact is made and broken mechanically, not magnetically, as in the vibrating systems; contact is a definite dwell, not a mere hammer blow. It is claimed that the efficiency of this system is very high, only one set of batteries being required per season.

Motor Car Literature

The United Danish Motor Owners' Association, Copenhagen, Denmark, has published a booklet containing maps which show all the motor routes throughout Denmark, and also includes some of the important Danish motor regulations.

Bulletin No. 39 is the latest publication from the Willard Storage Battery Co., Cleveland, O., which deals with the Elba system of electric lighting batteries for motor cars. The different types of batteries are illustrated and prices given.